

# MOTOR AGE

## SPIRITED RACING ON THE HOOSIER SPEEDWAY



HARROUN, MARMON



HARROUN, MARMON, WINNER OF SCHEBLER TROPHY

INDIANAPOLIS, IND., May 30.—The second meet in the history of the Indianapolis speedway undoubtedly was a huge success, financially as well as from a racing standpoint. Records were broken in

nearly all the class events, and, best of all, there was only one accident in which anyone was injured. Herbert Lytle was the sufferer in this and he came out with a broken leg. Safety precautions in the way of cement walls on the turns and the sand zones inside the pole undoubtedly prevented several mishaps.

The meet lasted 3 days—Friday and Saturday of last week and today—and as a result of the venture the promoters have something like \$35,000 on the profit side of the ledger. The first day probably 5,000 were in the stands; the second day attracted 25,000, while today brought out at least 50,000, which taxed the capacity of the stands and caused an overflow to the infield. The meet was remarkable from the fact that for the first time a set of national championship events was

put on, run under the auspices of and with the sanction of the American Automobile Association. That the people like championships was evidenced by the crowds.

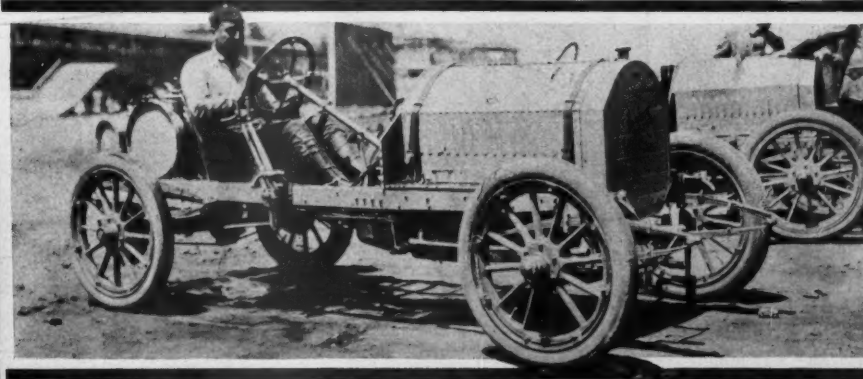
A resume of the 3 days showed that nineteen different makes of cars competed, representing 187 cars in all the races. That everyone had a chance was proved by the fact that twelve of the nineteen makers were placed; that is, finished either first, second or third. The National made a particularly good showing, winning nine firsts, twelve seconds and nineteen thirds out of fifty-nine chances. The Marmon captured five firsts, six seconds and four thirds out of twenty-two chances. The Fiat won five firsts and one second in six starts. Bragg, Harroun, Kincaide and Aitken were the big winners. The Wheeler & Schebler trophy was won by Harroun in a Marmon; the Prest-O-Lite by Kincaide in a National; the speedway helmet by Burman in a Buick, and the Remy brassard by Harroun in a Marmon four-cylinder. The only national records disturbed



KINCAIDE, NATIONAL



BURMAN, BUICK

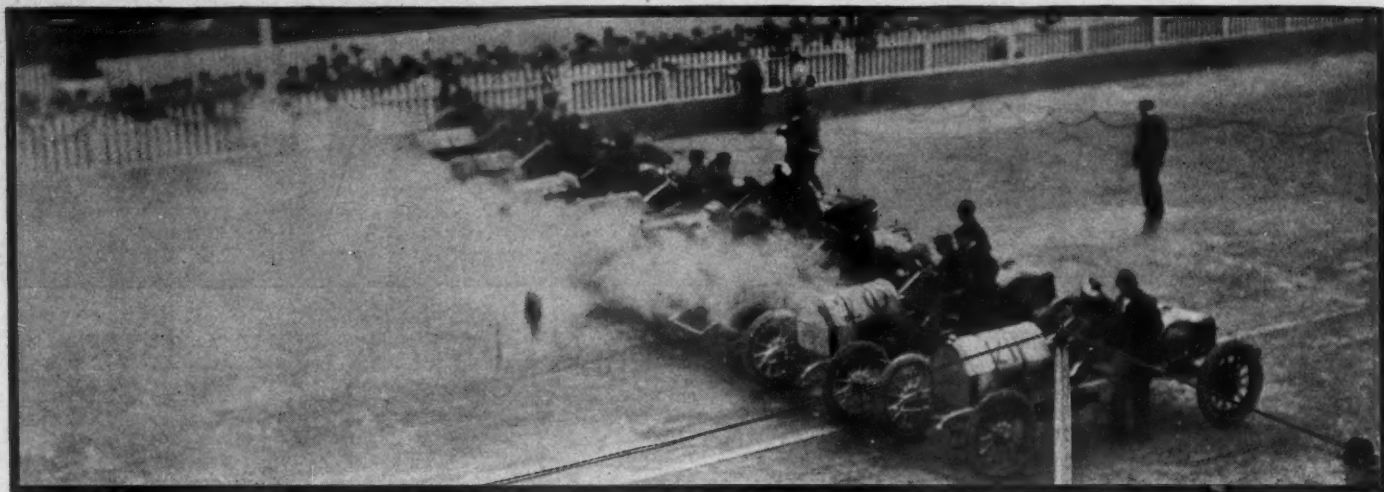


LYNCH IN JACKSON, SECOND IN SCHEBLER CUP RACE



BRAGG, FIAT

# HARROUN IN THE MARMON ADDS THE REMY



STARTERS IN THE REMY BRASSARD RACE, WON BY HARROUN, LINED UP AT THE TAPE

were the kilometer and the mile, both of those marks going to Oldfield in the big Benz, the kilometer being cut to :21.45 and the mile to :35.63. Many close records were cracked. Chevrolet in the Buick got the 5- and 10-mile marks in the 161-230 class; Harroun in the Marmon smashed the 5 and 10 in the 231-300 class; Aitken and Kincaide in Nationals and Dawson in a Marmon landed the 301-450 crop, while Oldfield in the Knox got the 5 and Aitken in the National the 10 in the 451-600 class. Record was not touched in the Schebler until after the 100-mile point had been passed, when Harroun cracked the old Atlanta marks. It is almost certain he could have cut the records inside the first century had he been pushed by his rivals.

Perhaps never before has the entry list of any stock car event been thrown into such a state of confusion as that which occurred Thursday evening, preceding the opening of Friday's events. It had been known for several days that every effort was going to be made to enforce the stock car rule. With this object in view the technical committee of the contest board of the American Automobile Association visited a dozen of the factories and took actual measurements of stock car parts and checked these over with cars entered. The evening preceding the race Referee Pardington, Chairman S. M. Butler, the speedway officials and the technical committee took the matter up at length, the result of which being the issuing of a statement by Referee Pardington as follows:

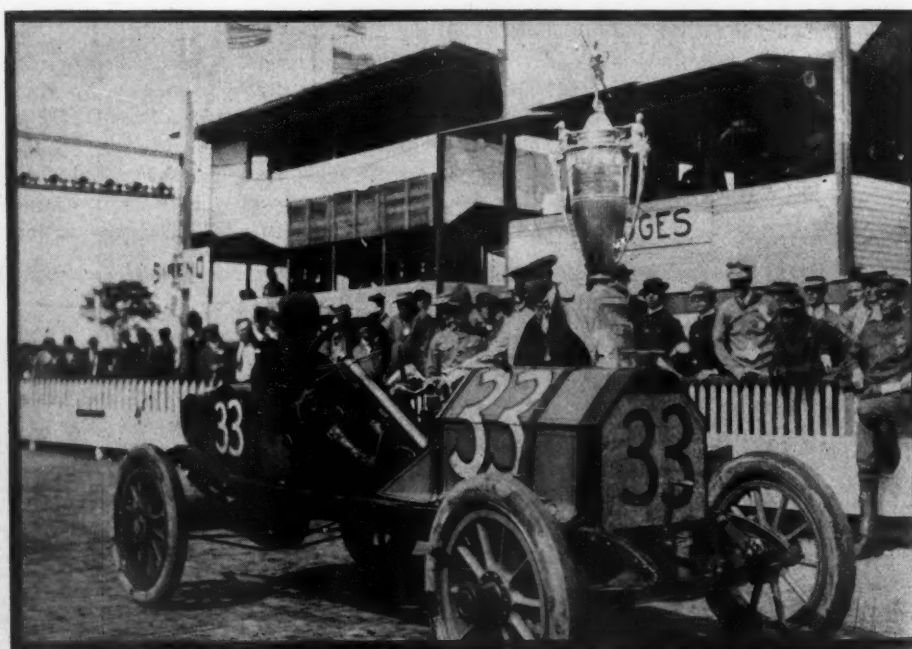
The following cars having been declared as contestants in the 3-day event on the Indianapolis motor speedway, to be held May 27, 28 and 30, and being ineligible to compete in the various stock car events, are hereby debarred from such competition in such events, viz.: Buick, model 16A, model 16B, model 100; Jackson, model 30; Cutting, model 50; Westcott, model F; American speedster; Fuller, 1911 roadster; Empire, 1911 model C.

Memorandum—The foregoing cars were debarred from competition in the stock car events because of the insufficiency of number manufactured as required by the 1910 rules of the contest board of the American Automobile Association, which provide that in no event shall the required number of the model entered be fewer than twenty-five.

INDIANAPOLIS, IND., May 30—Never before in the history of motor car racing on enclosed speedways has such a crowd witnessed so interesting a program of events as was provided at the Indianapolis speedway today, and which furnished entertainment for a crowd of over 50,000 spectators. The speedway with its seating capacity of 30,000 was entirely inadequate to accommodate the crowds. All of the parking spaces were occupied, and before the first race was called it was necessary to let several thousand spectators cross the track into the infield, where they were massed at points of advantage and controlled by the soldiers. Every available vantage point from the observation tower was made use of, and from the start to finish of the program the enthusiasm was rampant; in fact, it is questionable if any such crowd of spectators were ever so well entertained before at a similar event.

Today's events, besides being of interest owing to the great masses who witnessed them, were characterized by the breaking of one speedway record in the mile and kilometer trials, Barney Oldfield in his 200-horsepower Benz covering the kilometer in 21.45 seconds made a big onslaught on his own previous mark. In the mile trials Oldfield established a new American speedway record of 35.63, which was under his mark of 36.22 made on the Los Angeles motor-drome some time ago. A big purse was hung up by the speedway management for breaking these records, and particularly in the mile trials did Oldfield show spectacular bursts of speed.

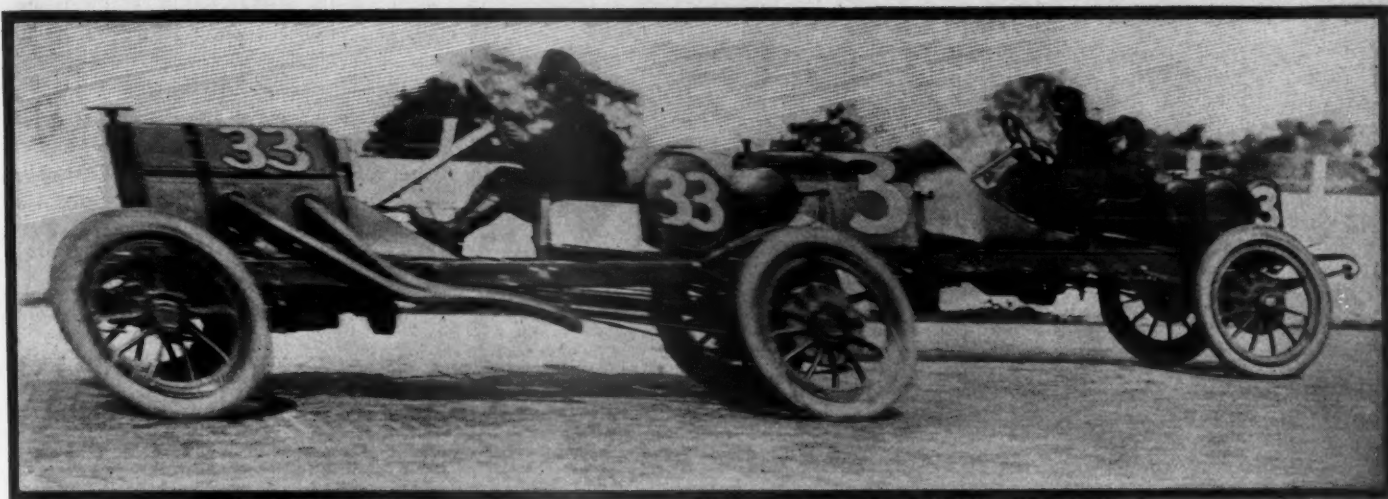
In today's program of national stock chassis championship races at 5 and 10-mile distances, only three previously existing records were broken. The first record to go was the 160-230 class for 10 miles, Chevrolet with his model 10 Buick setting the mark at 9:03.60. The previous mark



F. H. WHEELER PRESENTS WHEELER & SCHEBLER CUP TO RAY HARROUN



## BRASSARD TO HIS COLLECTION OF TROPHIES



HARROUN IN MARMON AND FOX IN POPE HAVE BRUSH IN THE REMY

was 9:49.46. The honor of having a new record for 10 miles in the 301-450 class went to John Aitken in a National 40, which was piloted over the distance in 7:57.08. The previous record was 8:08.98. It is somewhat remarkable that in this event all three National 40 entrants broke the previous record, the three running practically at even heat until near the finish, their times being: Aitken, 7:57.08; Kincaide, 7:57.56, and Merz 7:57.51. Oldfield, who had previously cut into the mile record figures, broke another record with his Knox six in the 5-mile event, or 451-600 class. He negotiated 5 miles in 4:01.36, which was practically 2 seconds under the former mark of 4:03.24.

Although national stock chassis records were not broken in many of the other events, these contests were most hotly contested from start to finish, and the attention of the grandstand held at high tension, it often being that the winner was

not a certain quantity until within 50 feet of the tape.

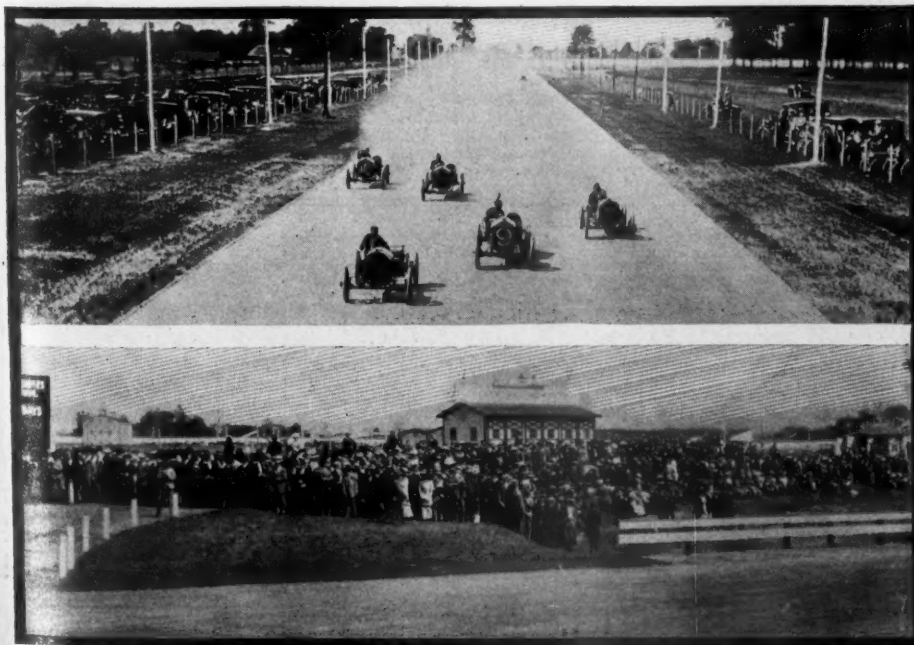
Today's racing was entirely free from accidents of any nature, although during the forenoon, when on a practice spin, Harroun, in Marmon 32, six-cylinder, which won the Wheeler & Schebler event on Saturday, broke a steering knuckle going into the upper turn. His car slid against the cement wall around the outer part of the curve, carrying away 5 feet of the wall, which was sufficient to start the car down the curve towards the inside of the track, where it came to a standstill without upsetting or injuring Harroun in the slightest. Another mishap which occurred before the races was the breaking of a crankshaft in No. 3 Pope-Hartford, which prevented its competing in the championship events. A new camshaft was secured and the car made ready for the last event of the day, which was a 50-mile race for the Remy grand brassard and the Remy grand trophy.

Today's events were all, with the exception of the 50-mile one, at 5 and 10-mile distances, the prizes in all championship events being gold national champion medals to the winners, silver medals for second position, and bronze medals for third place.

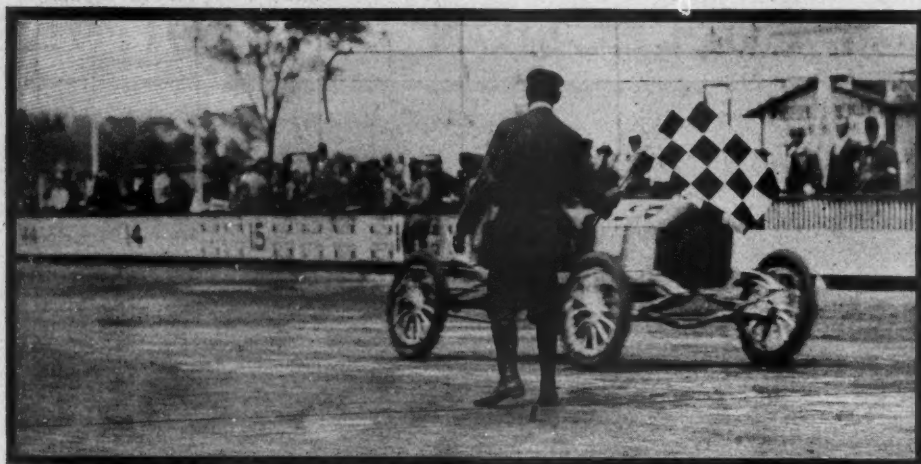
Event 1A, 10-mile free-for-all, was postponed from Saturday, and proved a great struggle between Kerscher's Darracq and Bragg's Fiat, up until the end of the third lap, when the Darracq threw a tire in front of the grandstand and did not complete the 10 miles. Bragg took the lead at the tape and was two lengths ahead of the Darracq at the end of the first lap. Bragg held the lead until 5 miles, but in the third lap the Darracq jumped to the fore and was leading several lengths past the grandstand when the tire flew away and was thrown completely beyond the outer fence. This allowed the Fiat to take the lead, which it held to the end, with Aitken in the National six second and Arthur Greiner, amateur, in the National 40, third. Kincaide in the National 6-60 dropped out on the last lap, due to gasoline troubles.

The John A. Wilson trophy race was a contest among stock cars carrying four passengers, the trophy, valued at \$150, to go to the car making the mile in 1 minute or less. Two contestants started—a Knox and a National. Due to burning out an ignition cable the National was out of it. The Knox traveled the mile first in one direction on the track and then in the opposite direction, going the mile north in 1:13.60, and the mile south in 1:10.45. According to the deed of gift the trophy still remains with the donor.

In the 161 to 230 cubic inches 10 miles event, the field was reduced to four starters—two Buick 10s, a Warren-Detroit and a Columbus, two Cole 30s, two E-M-F 30s and a Fuller having been excused because of mechanical troubles. The race was a runaway event with the two Buicks, both of which shattered the previous 10-mile record of 9:49.46, made by a Chalmers 30 at



IN A STOCK CHASSIS RACE—SPECTATORS IN INFIELD



CHEVROLET IN THE LITTLE BUICK BREAKING RECORD

Atlanta last fall. Chevrolet made the distance in 9:03.60, and Burman in 9:14.86.

Event 4, 5 miles, for 231-300 cubic inches class, brought out five cars—two Marmons, two Cuttings and a Marion. For half the distance it was a close struggle among the two Marmons and the Marion. At the end of the first lap the Marion led, only to surrender at 5 miles to the two Marmons driven by Harroun and Dawson, who were running a dead heat with the Marion 10 seconds behind and the Cuttings 20 and 26 seconds behind. The last lap proved a procession, the Marmons continuing at dead heat and finishing in 4:41.33 and 4:41.36, respectively.

There were six starters in the 5-mile free-for-all, and it gave promise of being one of the most interesting of the day, but just as Burman in his model 100 Buick started oil was noticed to be dripping from his gearbox, and soon a big piece of his differential bevel dopped on the track and he was eliminated from the contest. This left Kerscher in the Darracq, Bragg's Fiat, Aitken in the National 6-70 and National 40, driven by Kincade and Greiner in a similar car. At the finish Bragg had 9 seconds' leeway on the Darracq.

Event 6, 10 miles, 231-300 cubic inches, proved a particularly spectacular race from the grandstand, in spite of the field of only five cars, namely, two Marmons, two Cuttings, and the Marion. The Marion took the lead on the first lap and held it for three laps, but was passed by the two Marmons a short distance before crossing the tape, these three and one of the Cuttings being closely bunched at the finish.

In the 5 miles, 451-600 cubic inches class, Barney Oldfield, driving his six-cylinder Knox, defeated a field of three National 40s, and in this event cut practically 2 seconds from the stock chassis record for this distance. The reason of this cutting of the record was due to the manner in which Aitken and Kincade in National 40s pushed the Knox from the start.

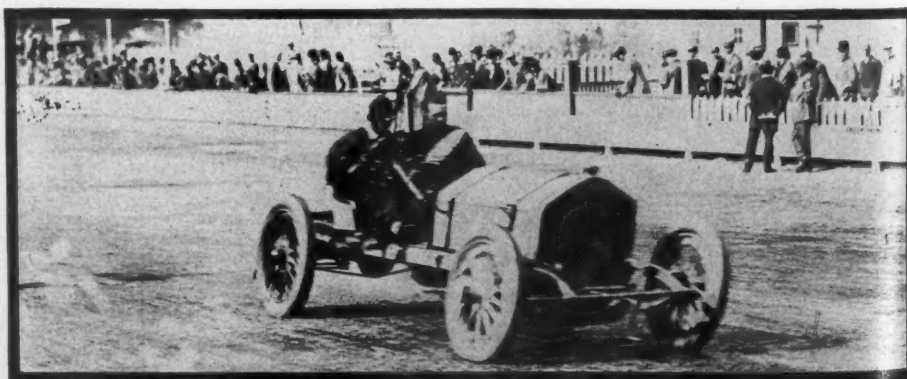
Event 8, 5 miles for the 301-450 cubic inch class, brought into competition three National 40s, a Marmon 33, and a Jackson 59, and proved a procession event by the three Nationals.

Owing to several of the cars not having contested in some of the earlier events, the handicapping in the free-for-all handicap was not as good as it should have been, the winner, Stoddard-Dayton model S, being given by clerical error 10 seconds too much handicap, and as a result led the rest of the field by a couple of hundred yards over the tape. Seven cars were bunched for second place.

Event 10, 10 miles for the 451 to 600 cubic inch class, was another contest between Oldfield in the Knox six and three

## COMPLETE SUMMARY OF RESULTS OF RACING MONDAY

TEN MILES, FREE-FOR-ALL, OPEN RACE				
Car No.	Driver	Car	5 mi.	10 mi.
14	Bragg	Fiat 90	3:36.60	7:21.95
7	Kincade	National 60	4:12.66	8:01.31
48	Greiner	National	4:22.44	8:26.87
8	Aitken	National 70	3:45.15	out
54	Kerscher	Darracq	3:38.48	out
TEN MILES, STOCK CHASSIS, CLASS B, 161-230 CUBIC INCHES				
Car No.	Driver	Car	5 mi.	10 mi.
36	Chevrolet	Buick 10	4:39.18	9:03.60
35	Burman	Buick 10	4:45.66	9:14.86
4	Frayer	Firestone-Columbus	5:18.48	10:32.46
26	Miller	Warren-Detroit	5:39.48	10:57.10
FIVE MILES, STOCK CHASSIS, CLASS B, 231-300 CUBIC INCHES				
Car No.	Driver	Car	2½ mi.	5 mi.
34	Dawson	Marmon 32	2:31.15	4:41.33
33	Harroun	Marmon 32	2:31.43	4:41.36
25	Anderson	Marion	2:30.85	4:50.59
21	Bisbee	Cutting	2:38.53	5:00.53
20	Clarke	Cutting	2:46.32	5:08.02
FIVE MILES, FREE-FOR-ALL, OPEN RACE				
Car No.	Driver	Car	2½ mi.	5 mi.
14	Bragg	Fiat 90	1:59.09	3:34.03
54	Kerscher	Darracq	2:00.09	3:43.67
8	Aitken	National 70	2:06.61	4:05.13
10	Kincade	National	2:10.31	4:06.52
48	Greiner	National	2:13.20	4:13.97
TEN MILES, STOCK CHASSIS, CLASS B, 231-300 CUBIC INCHES				
Car No.	Driver	Car	5 mi.	10 mi.
20	Clarke	Cutting	4:50.05	9:25.57
33	Harroun	Marmon	4:50.32	9:25.31
34	Dawson	Marmon	4:50.99	9:25.34
25	Anderson	Marion	4:47.05	9:26.12
21	Bisbee	Cutting	4:55.15	9:37.73
FIVE MILES, STOCK CHASSIS, CLASS B, 451-600 CUBIC INCHES				
Car No.	Driver	Car	2½ mi.	5 mi.
46	Oldfield	Knox	2:07.81	4:01.36
9	Aitken	National 40	2:08.18	4:01.92
10	Kincade	National 40	2:08.98	4:02.23
11	Herr	National 40	2:13.10	4:20.52
FIVE MILES, STOCK CHASSIS, CLASS B, 301-450 CUBIC INCHES				
Car No.	Driver	Car	2½ mi.	5 mi.
9	Aitken	National 40	2:08.93	4:06.69
10	Kincade	National 40	2:09.14	4:06.73
11	Merz	National 40	2:09.26	4:07.06
31	Dawson	Marmon 32	2:17.40	4:19.81
16	Lynch	Jackson	2:24.55	4:35.06



JOHN AITKEN IN NATIONAL SIX IN A FINISHING SPRINT

## TIME TRIALS

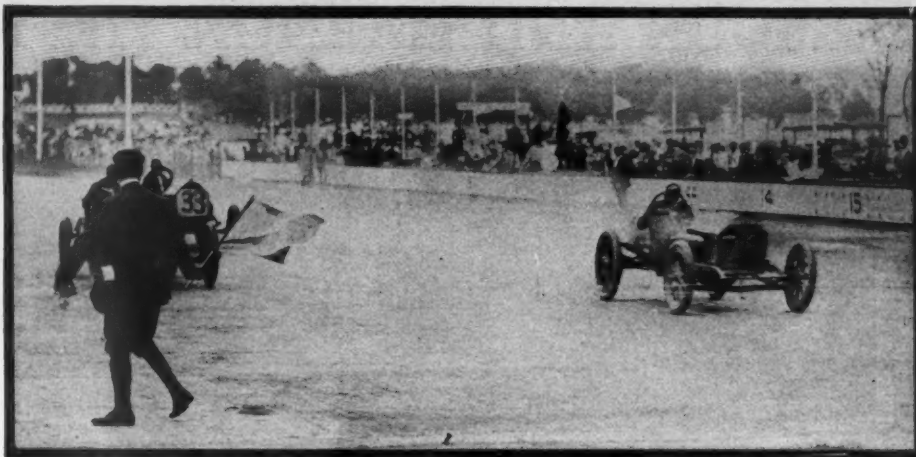
Driver	Car	Kilo	1 mi.
Oldfield	Benz	21.45	:37.1
Oldfield	Benz		:35.63



National 40s, piloted by Aitken, Kincaide and Wilcox. The Knox had a 9-second advantage, and was within but 3 seconds of the record for this distance in this class. Three National 40s, Marmon 32 and a Jackson 59 contested in the 10-mile 301-450 class, and it was a procession for the National.

As in previous free-for-alls, the 10-mile was a procession event, led by Bragg in his Fiat, closely followed by Kerscher in the Darraq, and with Aitken in the National 6-70 half a minute behind. Arthur Greiner contested in his National 40, and was nearly 1½ minutes behind the leader.

The 50 miles stock chassis, 231-300 cubic inch class, was the only long-distance event scheduled for the day, and was the closing



MARION IN FRONT IN EARLY PART OF TEN-MILE RACE, MONDAY

### COMPLETE SUMMARY OF RESULTS OF RACING MONDAY

FIVE MILES, FREE-FOR-ALL, HANDICAP							
Car No.	Driver	Car	Handicap	5 ml.			
45	Reed	Stoddard-Dayton	.54	3:38.65			
47	Touzey	National 40	.54	3:54.54			
8	Aitken	National 70	.27	3:56.86			
48	Greiner	National 40	.43	3:57.17			
36	Chevrolet	Buick 10	.66	3:57.44			
11	Merz	National 40	.43	3:57.96			
16	Lynch	Jackson	.62	3:58.23			
24	Tinkler	Marion	.75	3:59.40			
6	Endicott	Cole 30	.87	4:07.42			
5	Edmunds	Cole 30	.87	4:09.29			
26	Miller	Warren-Detroit	1:05	4:11.01			
28	Roberts	Herreshoff	.90	4:15.59			
25	Anderson	Marion	.75	4:29.43			
1	Motsinger	Empire 20	1:05	5:15.91			
TEN MILES, STOCK CHASSIS, CLASS B, 451-600 CUBIC INCHES							
Car No.	Driver	Car	5 ml.	10 ml.			
46	Oldfield	Knox	4:01.96	7:50.75			
11	Wilcox	National 40	4:05.75	7:59.83			
10	Kincaide	National 40	4:06.01	8:00.05			
9	Aitken	National 40	4:06.25	8:00.16			
TEN MILES, STOCK CHASSIS, CLASS B, 301-450 CUBIC INCHES							
Car No.	Driver	Car	5 ml.	10 ml.			
9	Aitken	National 40	4:06.43	7:57.08			
10	Kincaide	National 40	4:06.70	7:57.56			
11	Merz	National 40	4:06.16	7:57.61			
31	Dawson	Marmon 32	4:15.25	8:18.11			
16	Lynch	Jackson	4:30.78	8:47.55			
TEN MILES, FREE-FOR-ALL, OPEN RACE							
Car No.	Driver	Car	5 ml.	10 ml.			
14	Bragg	Fiat 90	3:37.02	7:02.68			
54	Kerscher	Darracq	3:37.95	7:04.30			
8	Aitken	National 70	3:53.45	7:39.18			
48	Greiner	National 40	4:19.02	8:27.08			
FIFTY MILES, STOCK CHASSIS, CLASS B, 231-300 CUBIC INCHES							
Car No.	Driver	Car	10 ml.	20 ml.	30 ml.	40 ml.	50 ml.
33	Harroun	Marmon 32	8:55.76	17:30.92	26:06.11	34:25.47	42:41.83
34	Dawson	Marmon 32	9:03.12	17:38.30	26:09.77	34:32.26	42:43.09
3	Fox	Pope-Hartford	8:55.96	17:32.13	26:08.65	34:36.94	43:11.05
29	Kincaide	Great Western	9:40.93	18:40.52	27:42.37	36:43.35	45:47.36
25	Anderson	Marion	9:29.26	18:43.11	27:49.33	36:52.18	45:57.27
26	Miller	Warren-Detroit	10:37.88	20:53.75	33:04.03	43:13.57*	
15	Scheffler	Jackson	13:20.22	22:16.52	31:20.99†		
20	Clarke	Cutting	27:49.91	36:56.36	46:15.02‡		

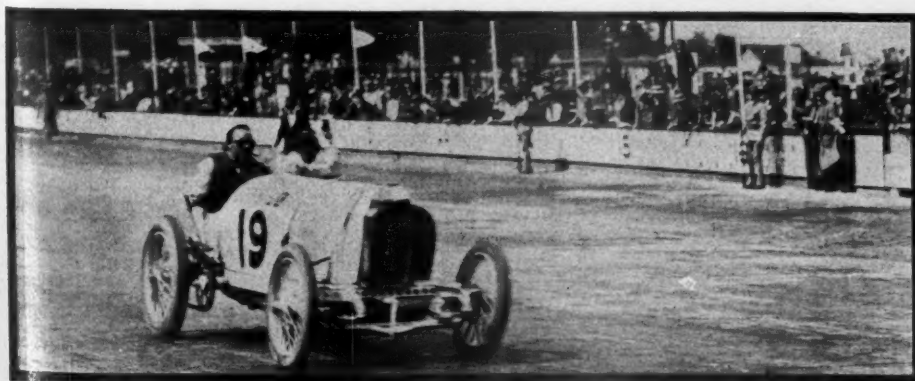
\*Made 17 laps †Made 13 laps ‡Made 12 laps

one of the meet. It was for the Remy brassard and the Remy grand trophy. The trophy goes to the winning car, and the brassard, an arm band, to the winning driver, and carries with it \$50 per week. A field of eight starters faced the tape, being: No. 33, Marmon 32, Harroun; No. 34, Marmon 32, Dawson; No. 3, Pope-Hartford, Fox; No. 25, Marion, Anderson; No. 29, Great Western, Kincaide; No. 26, Warren-Detroit, Miller; No. 15, Jackson, Scheffler; No. 20, Cutting, Clark.

From the report of the starter's whistle until 40 miles had been covered this event proved an interesting contest between Harroun in his Marmon and Fox of the Pope-Hartford, the latter having been laid up for repairs earlier in the day, due to a broken camshaft. It was a zig-zag from start to finish between these. The Marmons led for the first two laps. On lap three the Pope was a couple of lengths ahead, and maintained this on laps four and five. In lap six Harroun and Fox were side by side, with the Jackson in third place and the Dawson-Marmon fourth. Lap seven saw the Pope-Hartford in the lead, with Harroun three lengths back. In lap eight Harroun led by a couple of lengths, only to lose out in the ninth lap to the Pope. At the end of lap ten, with the race half over, Harroun was three lengths in advance of the Pope, with Dawson's Marmon two lengths back and the Jackson 15 seconds in rear. The Great Western, Marion, and Clark's Cutting were a minute and a half back of the leader. The second half of the race did not prove so interesting as the first, as it was apparent that Harroun had a fair advantage over the Pope-Hartford and maintained the lead throughout, the Pope losing perceptibly in the last few laps, due apparently to not sufficient oil. Harroun defeated Dawson by a couple of seconds and was half a minute ahead of the Pope.

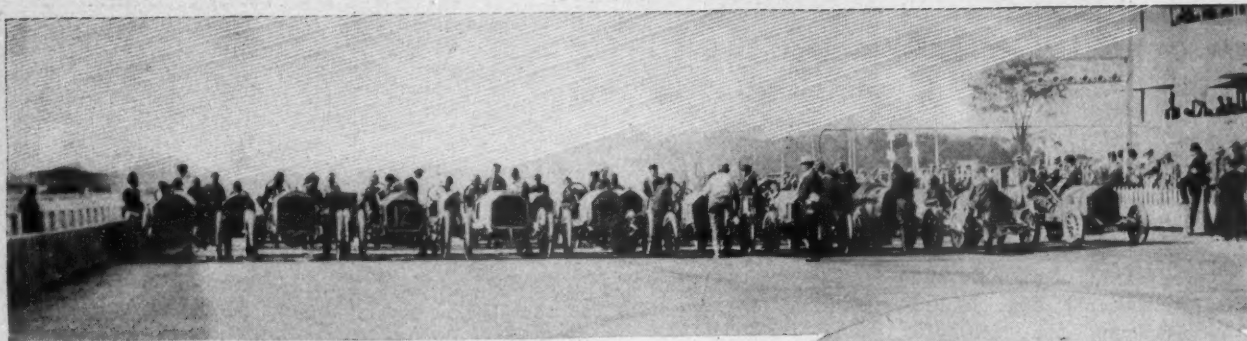
### WILSON TROPHY, 1 MILE

Car No.	Driver	Car	Time
56	Oldfield	Knox	1:10.45, 1:13.60
54	Faulkner	National 40	



BARNEY OLDFIELD IN BIG BENZ WHICH BROKE RECORD

# HARROUN AND MARMON FIRST NAMES TO BE



CARS THAT STARTED IN THE WHEELER &amp; SCHEBLER TROPHY RACE

## Brilliant Field Competes in 200-Mile Event in Which \$10,000 Cup is the First Prize—No Accident to Mar Classic

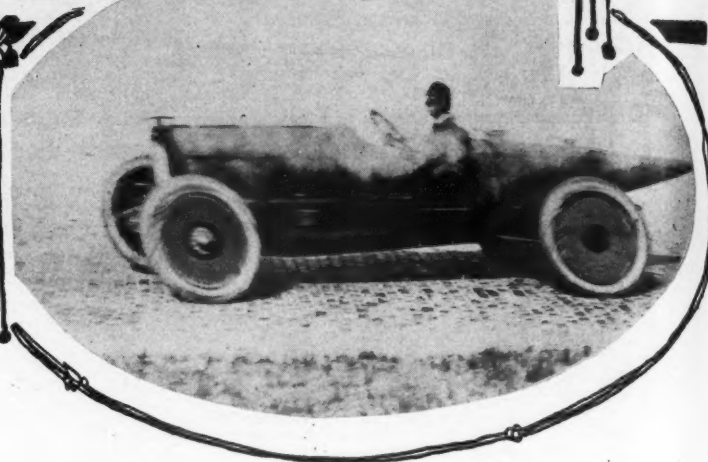
INDIANAPOLIS, Ind., May 28—Twice raced for, it was not until today that a winner was evolved for the Wheeler & Schebler cup, said to be worth \$10,000 and undoubtedly the most costly cup ever put up for any kind of a sporting competition. Now the first leg on the towering trophy is held by the Marmon people through the plucky efforts of Ray Harroun of Chicago, who guided the Marmon six-cylinder Wasp 200 miles in 2 hours 46 minutes 32 seconds at an average speed of 73.5 miles an hour, defeating a rare field which included the best cars now racing on American tracks. Nineteen cars started; four were allowed to finish, and seven others were still running when the judges stopped the proceedings. The contest was free from accidents, the only thriller being when Oldfield lost a tire, cleverly maintained control of his Knox six and then drove 2 miles on the rim until he could put on a new tire.

The Wheeler & Schebler race, which was for class E cars of 600 cubic inches or less and of a minimum weight of 2,300 pounds, undoubtedly was the star attraction and it brought out a field that included three Marmons, driven by Harroun, Keene and Dawson; three Jacksons with Lynch, Ellis and Schwitzer up; three Buicks, two of them the new 100 models, driven by Louis Chevrolet and Burman, and the other a 16 B with Arthur Chevrolet pilot; four Nationals, driven by Aitken, Kerscher and Merz; three Cuttings with Clarke, Bisbee and Kelnaw driving; a Pope-Hartford handled by Fox; a Knox six with Oldfield in the seat, and a Westcott driven by Endicott. The four that finished were the Marmon six, the Lynch Jackson, the Aitken National and the Chevrolet Buick. The Pope had completed seventy-eight laps, the Knox and the Kerscher National seventy-seven, the Merz National and the Clarke Cutting seventy-six, the Ellis Jackson seventy-five, the Bisbee Cutting sixty-

eight and the Keene Marmon fifty-two.

This gave the Marmon, Jackson and Cutting two out of three survivors, the National three out of four, the Buick one out of three and Knox and Pope one out of one. Again scanning the survivors, the critics discovered that the Jackson, driven by Lynch, went the entire 200 miles without a stop of any kind, while the Harroun Marmon drew up at the pit only once and that was to take on oil and gasoline, foxy Harroun being so far ahead at the time that he concluded not to take any chances of running out of fuel. This, then, would seem to answer the argument as to whether or not the brick surface is especially injurious to tires, for these two cars, the Jackson and Marmon, went the full distance without trouble in this department.

Much was expected from the two big Buicks with the 6 by 5 1/4-inch cylinders



HARROUN IN MARMON, WINNER OF SCHEBLER CUP RACE

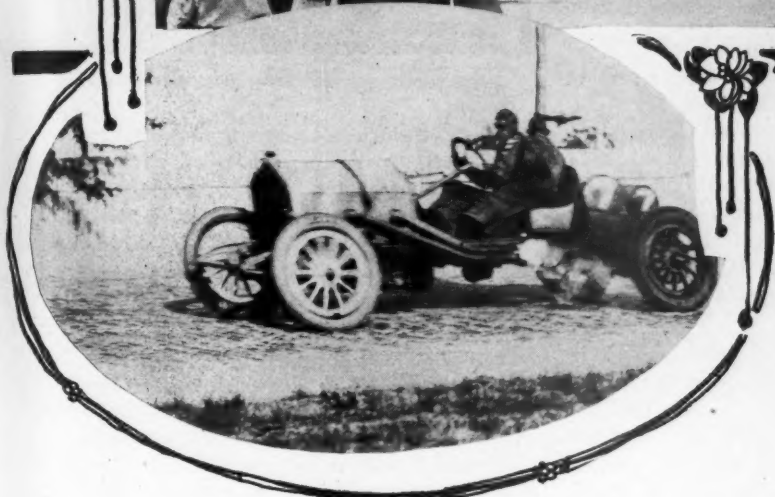
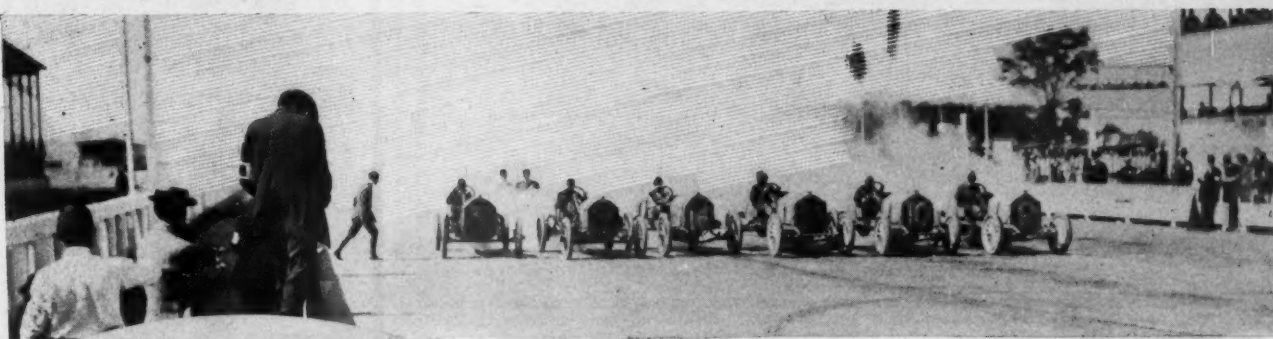
and, indeed, it looked in the early stages as if they would be factors of considerable importance, while the 16-B Buick, driven by Arthur Chevrolet, promised to be even more dangerous. At the gun Arthur Chevrolet jumped out and commenced beating it, and for the first few rounds he had a comfortable lead over the field, although doggedly pursuing him was a little bunch which included his brother Louis, Harroun and Kincaide. But Arthur seemed to have them at his mercy and he did not abate his tremendous clip for the first few laps. But soon the field began to adjust itself. Harroun, running on a schedule and as calm as if he were taking a spin on the boulevards, commenced to creep up yard

WHEELER &amp; SCHEBLER TROPHY, 200 MILES, CLASS E, 600 CUBIC INCHES

No.	Car	Driver	Bore and Stroke	10m	20m	30m	40m	50m	60m	70m	80m	90m
32	Marmon six.....	Harroun.....	4 1/2 x 5	8:18	16:03	23:51	31:38	39:27	47:25	55:30	63:26	71:33
16	Jackson.....	Lynch.....	4 3/4 x 4 3/4	9:23	18:07	26:52	35:32	44:09	52:45	61:15	69:47	75:18
7	National.....	Aitken.....	5 x 5 1/4	8:40	16:58	25:01	33:35	42:05	50:32	58:59	67:31	72:55
44	Buick.....	A. Chevrolet.....	4 1/2 x 5	9:02	17:07	25:47	34:08	42:31	51:43	60:10	69:55	78:26
3	Pope-Hartford.....	Fox.....	4 1/2 x 5 1/2	9:05	17:42	26:24	35:06	43:57	52:43	61:26	72:41	81:34
46	Knox six.....	Oldfield.....	5 x 4 3/4	9:01	17:45	26:25	35:09	43:55	52:05	60:35	68:50	75:30
47	National.....	Kerscher.....	5 x 5 1/4	8:49	17:21	25:54	34:38	43:01	51:40	60:49	69:12	75:21
11	National.....	Merz.....	5 x 5 1/4	9:04	18:09	27:14	36:18	45:18	54:06	62:54	71:36	78:24
22	Cutting.....	Clarke.....	5 x 5 1/2	9:26	18:06	26:53	35:32	44:04	52:48	61:49	70:50	78:50
18	Jackson.....	Ellis.....	4 1/2 x 4 3/4	9:02	18:16	27:17	36:25	45:25	54:27	63:34	72:43	81:46
20	Cutting.....	Bisbee.....	5 x 5 1/2	9:39	21:28	30:53	40:15	49:54	59:17	68:48	78:07	83:21
41	Buick.....	Burman.....	6 x 5 1/2	8:14	16:12	24:21	32:08	40:10	48:03	56:47	65:09	73:09
31	Marmon.....	Keene.....	4 1/2 x 5	9:46	19:18	28:45	38:19	47:46	57:20	66:54	76:36	83:46
17	Jackson.....	Schwitzer.....	4 1/2 x 4 3/4	22:59	48:60	58:05	67:03	76:03	85:05	94:02	102:52	111:47
21	Cutting.....	Gelnaw.....	5 x 5 1/2	9:48	19:04	28:13	37:35	46:05	54:26	62:42	70:59	78:38
42	Buick.....	L. Chevrolet.....	6 x 5 1/4	8:27	20:10	28:51	37:33	46:10	54:26	62:42	70:59	78:38
12	Westcott.....	Endicott.....	4 1/2 x 5	9:48	19:23	28:54	38:33	48:17	58:26	68:26	78:08	83:21
30	Marmon.....	Dawson.....	4 1/2 x 5	8:58	17:28	25:53	34:08	42:15	50:15	58:26	66:46	75:08
10	National.....	Kincaide.....	5 x 5 1/4	8:22	19:15	27:40	36:08	44:15	52:15	60:15	68:15	76:15



INSCRIBED ON WHEELER & SCHEBLER TROPHY



### AITKEN IN NATIONAL WINNING CLASS RACE

by yard until at the 10-mile post he only was 4 seconds behind A. Chevrolet. At 15 miles he decided it was time to play his hand and at the tape he shot by the 16-B Buick and took the lead. From that point on he never was headed, and at no time was he in danger of letting go his hold on the pacemaking position.

Arthur, however, was not to be shaken off this easily and he gave chase so effectively that at the end of 20 miles he was within shouting distance of the leader, just 9 seconds back, while Johnny Aitken was sticking in third place. Thirty miles saw the Burman Buick second, and Harroun was 30 seconds ahead. Aitken had dropped back and third place was filled by

ways was on the move. Third place at 30 miles was as close as he got to the top, however.

Forty miles saw one, two, three the Harroun Marmon, the Dawson Marmon and A. Chevrolet Buick. Lynch's perseverance in the Jackson had begun to be rewarded and he had worked out of the ruck up into fourth position. Harroun, however, was constantly going away from his field and 40 miles showed him 3 minutes 35 seconds ahead of his team mate and almost 4 minutes ahead of the fourth man, Lynch. It looked then as if he would lap his field within a short time and so it proved, for the seventeenth time around showed him a clean  $2\frac{1}{2}$  miles to the good and running

START OF THE 301-450 CLASS RACE ON SATURDAY, WON BY AITKEN

## Winner Goes Double Century, Stopping Once for Fuel and Oil—Non-Stop Run by Lynch in the Jackson, who is Second

Kercher in the National. Kerscher at the last minute had taken the place of the amateur Tousey and while he was a stranger to the National, he managed it very well and al-

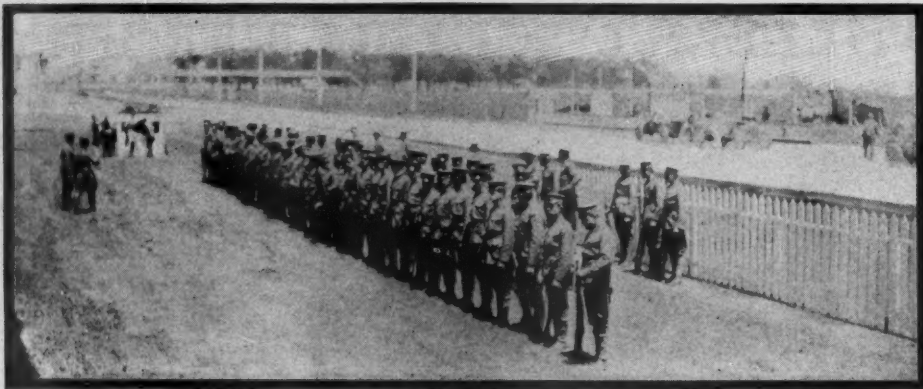
easily. The Marmon six held the center of the track and Harroun never let the others worry him in the least. He did not deviate from his line all the way around and consequently never was brawling for position. It was shortly after this that the Dawson Marmon was forced out of the race when it had so good a position. Dawson went off the track on the back stretch and the mishap dished his front wheels and caused his retirement, he being the second to chuck it, the first being Kincade in a National, who dropped out with a cracked cylinder. Dawson broke a steering knuckle.

At the half century the order was Harroun, A. Chevrolet and Fox in the Pope. Harroun was more than 4 minutes to the good and running calmly, while the Pope-Hartford man was battling hard to overhaul Chevrolet, there being only 24 seconds between them.

From this time on there wasn't much to vary the monotony of the long grind, the interest being centered in the fight for second in which the contenders were Lynch in the Jackson, Arthur Chevrolet in the Buick and the Fox in the Pope-Hartford. Lynch was running determinedly and hoping that something might happen which would pull him close to the Wasp. At the end of the forty-third lap Harroun stopped at the pits and Lynch plucked up fresh hope. But there was nothing the matter with the Wasp—it just was a stop to take on fuel and oil and while Harroun lost a lap it didn't upset him and soon the Marmon was plowing away again. At 130 miles Lynch was the runner-up but the next 10 sifted him back to third and gave the place to Arthur Chevrolet, who stayed there for some time. Lynch, however, regained the place at 170 miles and there he stuck to the end. At 180 miles Chevrolet had dropped still further and it was evident from his several stops at the pits that he was out of it so far as a position was con-

**OR LESS. MINIMUM WEIGHT, 2,300 POUNDS. WON BY HARROUN IN MARMON**

[illegible]



INDIANA SOLDIERS WHO KEPT THE CROWDS BACK

cerned. Aitken stepped into his shoes and when the finish came it showed Harroun two laps to the good and with the other finishers Lynch, Aitken and Chevrolet in the order named. Harroun had slowed considerably in the later part of the race. At about 150 miles he had averaged 75.6 miles an hour, the last 50 was at so slow a clip that his general average for the race was cut to 73.05 miles an hour.

#### Cars That Competed

It must be understood that the cars entered in the Wheeler & Schebler race did not have to be stock propositions, and the winning Marmon, driven by Harroun, was not a stock car in that it is the only one of the kind that has been built. This car made its first appearance at the spring meet of the Atlanta speedway a month ago. It is a six-cylinder design with cylinders  $4\frac{1}{2}$ -inch bore and 5-inch stroke, the twin castings with opposite valve being the same as used on the four-cylinder Marmon, model 32 for the present season. This car is unique in that it has no differential, which has been left out in order that the useless spinning of wheels, when bounding from the track at high speed, is avoided. The car also has been designed for high-speed work by the use of a long nose at the rear, as well as by employing standard wheels with sheet metal disks outside of the spokes.

Two cars of absolutely new design which competed in this were the Buick model 100 two special racing machines of the four-cylinder type with 6-inch bore and  $5\frac{1}{4}$ -inch stroke. These are not stock, as only two of them have been constructed. They are chain-drive constructions and are heavily-built racing machines employing the valve-in-the-head construction used on the Buick line. The three Jacksons, known as model 59, which competed have  $4\frac{7}{8}$ -inch bore and  $4\frac{3}{4}$ -inch stroke. This model has been built in sufficiently large quantities to pass it into the stock car field. As a stock model it is made with the pistons perforated to reduce the weight and with high motor speed. The model 30 Jackson with cylinders  $4\frac{1}{2}$  inches square was barred from stock events due to the use of perforated pistons which are not stock in this model.

The Empire 1911 model  $3\frac{1}{2}$ -inch bore and 4-inch stroke, was not allowed to com-

pete in stock events in that only a few of this type have been built. This is a shaft-drive car, having a gearset incorporated with the rear axle. A change has been made in it as compared with this year's Empire in that the cylinder head is now integral with the casting forming the four cylinders. The car is made with a pressed steel frame construction and other improvements.

The Pope-Hartford which competed is the roadster type which differs from that used in the regular touring cars in that the pistons are perforated. The other cars not eligible for stock events were the Cutting with cylinders 5 by  $5\frac{1}{2}$ ; a Buick model



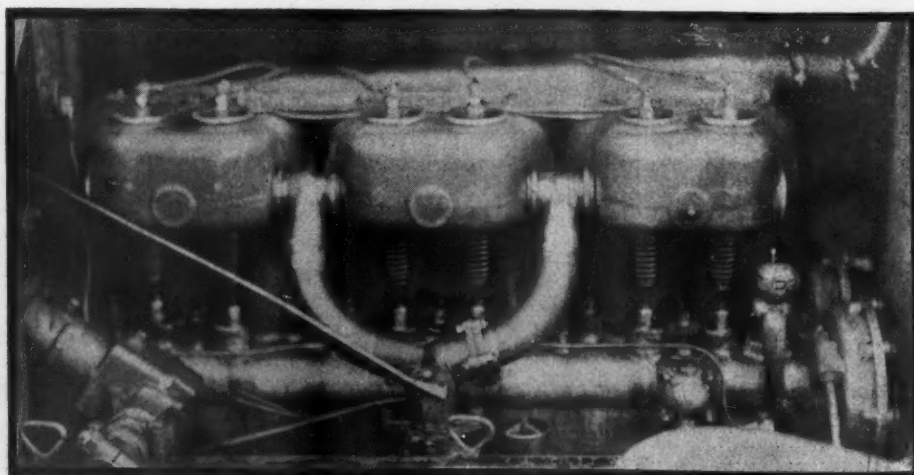
HERBERT LYTLE IN AMERICAN

16A, 4 23-64-inch bore and 5-inch stroke; Buick 16B,  $4\frac{1}{2}$ -inch bore and 5-inch stroke; Fuller, 1911 roadster, 4-inch bore  $4\frac{1}{2}$ -inch stroke; American Speedster,  $5\frac{3}{4}$ -inch bore,  $5\frac{1}{2}$ -inch stroke; and Westcott model F,  $4\frac{3}{4}$ -inch bore and 5-inch stroke. These cars were barred from stock competition solely because twenty-five of each model have not been built. The A. A. A. rules this year call for a minimum of twenty-five cars of any one model, and a percentage of the total output of cars for the year.

It was 7 o'clock before the big race ended, and although there was still one left

### COMPLETE SUMMARY OF THE RESULTS OF RACING ON SATURDAY

TEN MILES, CLASS D, FREE-FOR-ALL HANDICAP						
No.	Car	Driver	Handicap Time	Handicap	Actual Running Time	
11	National	Wilcox	7:15.33	:50	7:16.33	
16	Jackson	Lynch	7:18.03	1:25	8:43.03	
22	Cutting	Clarke	7:19.00	1:25	8:44	
25	Marion	Anderson	7:30.10	1:25	8:55.10	
48	National	Greiner	7:34.40	:30	8:04.40	
3	Pope-Hartford	Fox	7:35.70	1:00	8:35.70	
8	National	Aitken	7:40.72	:25	8:05.72	
47	National	Tousey	7:41.14	:50	7:41.64	
28	Herreshoff	Kelnow	7:46.95	2:40	10:26.95	
4	Flrestone	Frayer	7:52.17	2:20	10:12.17	
24	Marion	Tinkler	7:57.53	1:45	7:58.98	
27	Hupmobile		8:06.96	3:40	11:46.96	
46	Knox	Oldfield	8:14.65	Scratch	8:14.65	
5	Cole	Edmunds	8:18.93	2:20	10:36.93	
18	Jackson	Ellis	8:19.12	1:25	9:44.12	
26	Warren-Detroit	Miller	8:19.85	2:20	10:39.85	
21	Cutting	Bisbee	8:26.91	1:40	10:06.91	
12	Westcot	Endicott	8:32.86	1:25	9:57.86	
1	Empire	Motsinger	8:36.32	2:40	11:16.32	
2	American	Lytle	Accident	:25	.....	



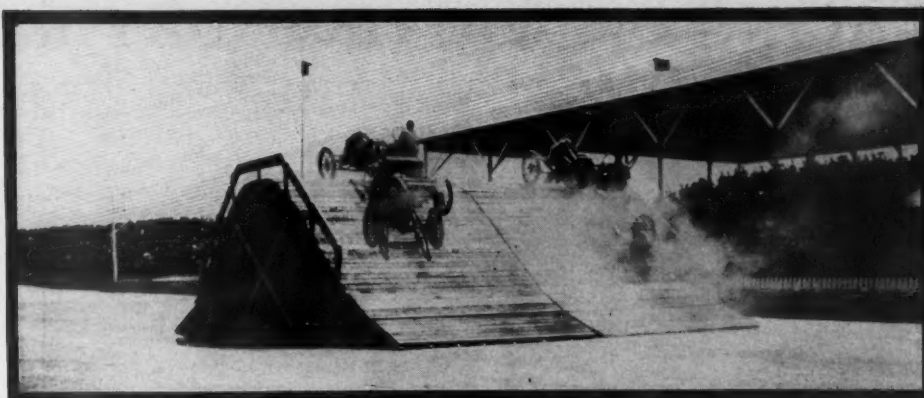
INTAKE SIDE OF THE MARMON SIX-CYLINDER CAR





BEN KERSCHER IN DARRACQ

a 1-mile free-for-all for class D cars, that was postponed to Wednesday. The amateur race was abandoned because only Greiner and Tousey were ready to run, which left the day's card rather meager outside of the Schebler cup event. Besides that classic there were run the time trials at 1 mile, won by Bragg in the Fiat; the 301-450 class 10-mile taken by Aitken in the National; the 451-600 10-mile stock chassis, captured by Oldfield in the Knox six, and the 10-mile class D free-for-all handicap which went to Wilcox in a



OVERLAND CARS COMPETING IN OBSTACLE RACE

National which had a 50-second handicap.

It was in this handicap that the only accident of the meet to date occurred and that was serious enough to probably retire from competition for all time of that dean of American racing men, Herbert Lytle, who now is laid up with a fractured leg which will keep him in the hospital for a couple of months at least, the break being in the thigh bone of the left leg. Twenty cars started in this handicap, with Oldfield in the Knox on scratch. It looked to be an exciting event, and so it proved. Lytle in the American had but :25 handicap, but he lost no time and at the end of the back stretch on the last time around he had

caught the leaders. Here was where the accident occurred, but just what caused it accounts differ. The accredited version is that Lytle after he had swept by the leaders, cut to the pole and went a trifle too far. It is said his inside front wheel hit the soft dirt on the inside, causing a skid which was accentuated by an oily spot on the track. This sent the American back into the dirt and it turned partially over. The mechanic, William Clifton, was thrown clear, but Lytle was not so fortunate. An examination of the car showed a broken front wheel, a bent steering knuckle and two flat rear tires. Lytle now declares he is through with racing for good and that upon his recovery he will seek some other profession than that of a racing driver.

Starting the day's sport was an obstacle race that was something out of the ordinary and in which competed six of the Overland's testing cars. This race consisted of placing on the track two huge wooden inclines up which the cars had to climb. One was in front of the grand stand and the other by the bleachers. It was an interesting struggle and was enjoyed by the spectators, although it delayed the rest of the card somewhat because of the difficulty experienced in moving the wood mountains.

The time trials at 1 mile followed, but the record was not broken in this, the time not being as fast as that of yesterday. Again Bragg in the Fiat proved the fastest, his time being :41.03, with Kerscher in the Darracq second with :41.83 and Harroun in the Marmon third with :42.37.

The most spirited finish of the meeting so far came in the 10-mile race for 301-450 stock chassis cars in which Aitken nipped Harroun right at the tape after making a magnificent run from the rear, while Merz in another National was right at the Marmon's rear wheel. Aitken came so fast at the end that he made Harroun gasp with astonishment as the big blue car whizzed by him.

Oldfield made his first appearance at the meet when he drove in the 451-600 class at 5 miles against Herr in the National and Aitken in the National. Oldfield never was in danger, though, and once in front stayed there, apparently playing with his rivals.

### COMPLETE SUMMARY OF THE RESULTS OF RACING ON SATURDAY

#### RECORD TRIALS AT 1 MILE, CLASS D CARS, FLYING START

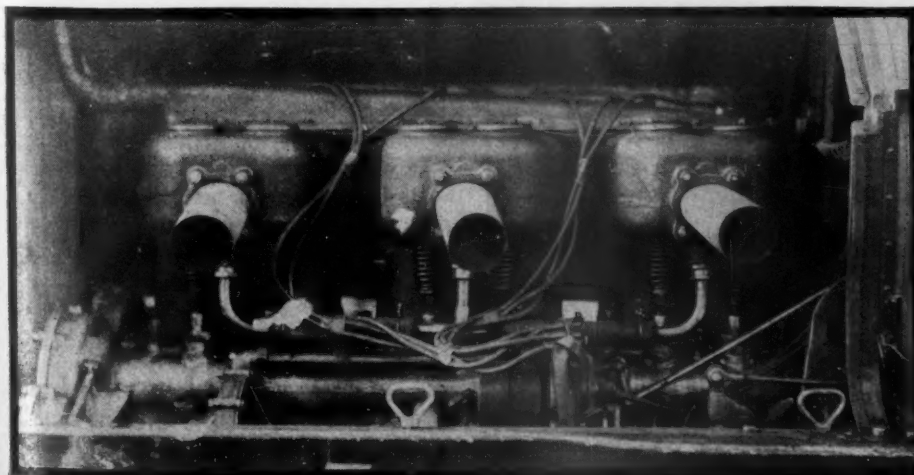
No.	Car and driver	Time	No.	Car and driver	Time
14	Fiat 90, Bragg.....	:41.03	2	American, Lytle.....	:44.44
54	Darracq, Kerscher.....	:41.83	8	National, Aitken.....	:46.37
32	Marmon six, Harroun.....	:42.37	1	Emple, Motsinger.....	1:47.03

#### TEN MILES, 301-450 CLASS, STOCK CHASSIS

No.	Car	Driver	5 mi.	10 mi.
9	National .....	Aitken .....	4:12.15	8:08.98
30	Marmon .....	Harroun .....	4:12.62	8:09.06
11	National .....	Merz .....	4:13.05	8:10.14
10	National .....	Kincade .....	4:12.15	8:12.02
16	Jackson .....	Lynch .....	4:29.37	8:43.81

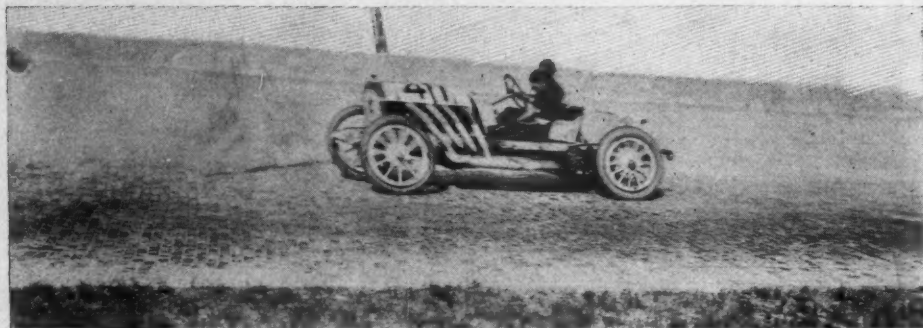
#### FIVE MILES, 451-600 CLASS, STOCK CHASSIS

No.	Car	Driver	2½ mi.	5 mi.
46	Knox .....	Oldfield .....	2:09.92	4:03.24
11	National .....	Herr .....	2:10.42	4:04.54
9	National .....	Aitken .....	2:10.84	4:04.30



EXHAUST SIDE OF THE MARMION SIX-CYLINDER MOTOR

# RACING ON THE FIRST DAY RESULTS IN KEEN



BURMAN IN BUICK 100 WINNING HELMET FREE-FOR-ALL

INDIANAPOLIS, IND., May 27—The Hoosiers showed they were eager for another taste of speedway racing after a winter spent in discussing the pros and cons of track surfacing, wondering whether or not the brick pavement would come up to expectations in a speedway and whether or not Indianapolis would regain the stock-car marks captured by Atlanta last fall. The results of the afternoon effectually answered these questions in the affirmative. While no free-for-all marks were shattered, still in nearly every one of the class events run Indianapolis had the better of the argument with Atlanta and when the revised record table is made up it will be found that the Hoosiers will figure most prominently.

Not only did the new brick surfacing prove fast, but it also demonstrated that it is not so rough on tires as expected, especially with the smaller cars. The shaving given the bricks by the Overland testers proved most beneficial in removing the jagged bits of cement and there wasn't a single complaint heard as to the track. There was tire trouble in the long race, but the National had most of it and, strange to

say, it all was on the right rear. On the other hand, Harroun in the Marmon and his team mate, Dawson, ran through the century without worrying over their tires, their defeat being due to valve tappet trouble instead.

That Indianapolis was keen for the sport was shown by the attendance. Fully 6,000 people were in the stands; they came early and they stayed late, and they enjoyed every bit of the racing. It is true the action of Referee Pardington in ruling out several cars on the ground that they did

## New Brick Surface Proves To Be As Fast As Expected by Hoosiers and Not Hard on Tires

not come up to the stock car definition shot holes in the program, so to speak, but the people did not complain, even though these enforced scratches brought out only three Nationals in one of the races.

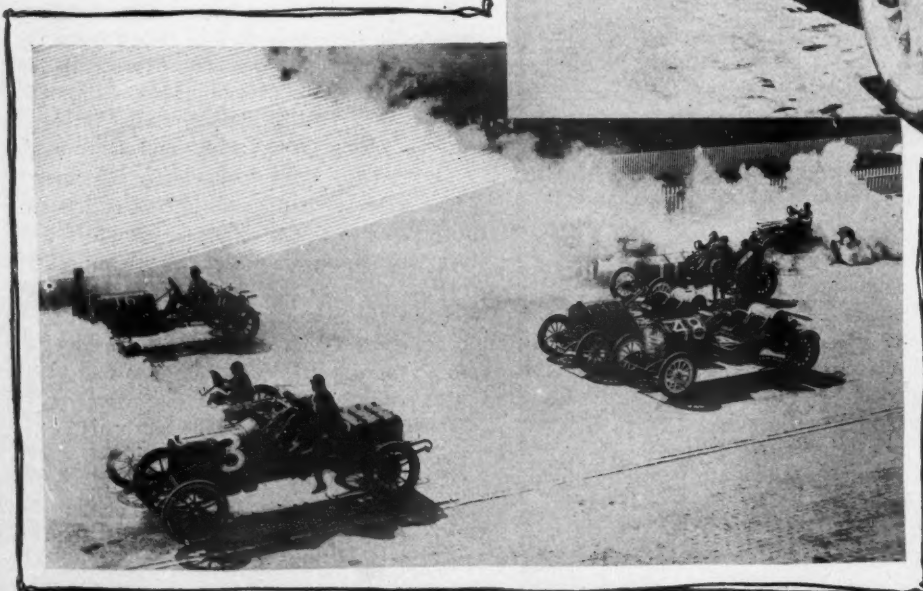
Of course, the main event of the afternoon was the 100-mile race for the Prest-O-Lite trophy, which last year was won by the Buick, which did not have a chance to defend its title because of Referee Pardington's ruling which made Chevrolet and Burman sit on the side lines. The Westcott and two of the three Jacksons were out for the same reason. This left in the field Fox in the Pope-Hartford, Aitken, Kincaide and Merz in Nationals, Lynch in a Jackson and Harroun and Dawson in Marmons. Aitken set the pace at the start, but he had plenty of competition, for the two Marmons dogged his heels continually while he was trying to shake the field. This trio formed the first group while in grim pursuit and some little bit back were Kincaide and Merz.

The first trouble came in the sixth lap



AMATEUR GREINER IN NATIONAL

when Fox in the Pope-Hartford was put out of the running when a steering knuckle broke, causing him to run off the track on the inside and break a wheel. Neither driver nor mechanic was hurt and the race proceeded. Shortly after this the Nationals began to have tire troubles. Aitken had to stop in the eleventh round, the first to pull up at the pits. Kincaide and Merz also had similar troubles, so that at the end of 20 miles Dawson had assumed the lead and was nearly a minute ahead of Harroun and Aitken. At this stage, Kincaide, the ultimate winner, was next to last, the Jackson being the trailer. At 30 miles Harroun



FIELD AT TAPE FOR THE HANDICAP RACE FRIDAY

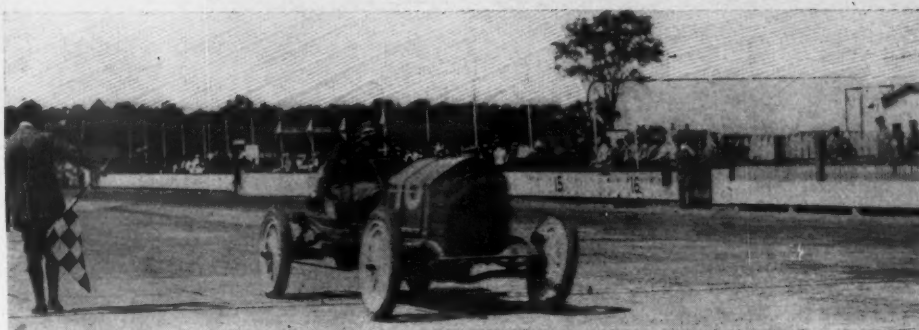


# COMPETITION AND MANY RECORDS BROKEN

## Kincade in National Wins the Prest-O-Lite and Burman in Buick Speedway Helmet Race

was the pacemaker, closely pursued by Dawson and Merz, while Kincade was absolutely last. Inside the next 10 miles Harroun had to surrender his lead, having to pull up at the pits in the fourteenth round to repair a valve tappet. While he was doing this he lost three laps and at 40 miles his team mate, Dawson, was making the running, the Nationals still fighting tire troubles. Kincade was closest, but even he was 1 minute 18 seconds back of the leader. The same order prevailed at the half-century, which was turned in 40:28 by the Marmonite. Dawson continued to pick up the odd seconds and at 60 miles he was 2 minutes 18 seconds to the good, with Merz the runner-up. At 70 miles the gap was even wider, Dawson having almost 4 minutes advantage over Kincade, who had begun to get his second wind.

Dawson got his, though, just when victory seemed certain. He was two laps ahead when he had to stop at the pits for the first time. This was in the thirty-sixth round and an examination disclosed the



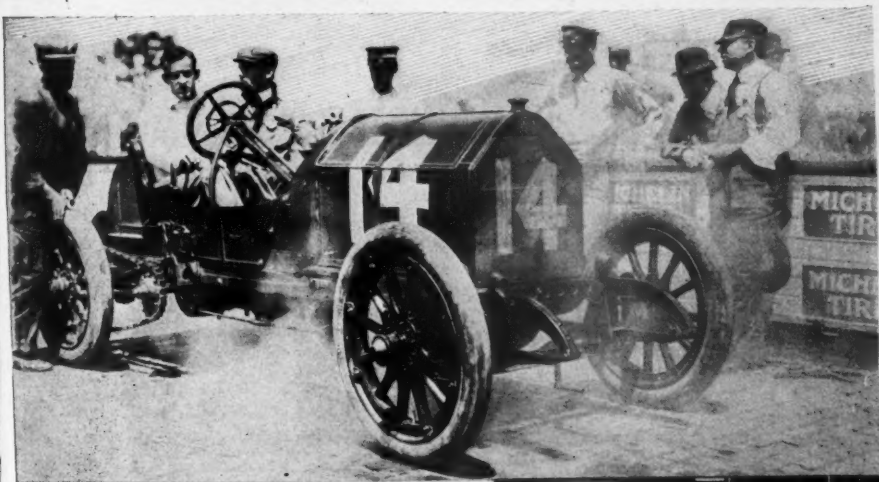
KINCADE IN NATIONAL WINNING THE PREST-O-LITE TROPHY RACE FRIDAY

motor speedway helmet, a new trophy which carries with it a cash prize of \$100 and a salary of \$50 a week to the holder. This brought out a rare field, among which were the two big Buicks with the 6 by 5¼-inch cylinders which had been ruled out of the stock chassis class. Bragg in the Fiat, Kerscher in the Darraq, Harroun in the Marmon six, Aitken in the new National 70 and Kincade in the six-60, and Lytle in the American. Young Bragg jumped the field from the pistol and had a nice lead of 50 yards going into the back stretch, where

Burman in one of the Buicks dug after him. From this point on the race was between these two and it looked as if Bragg held the whip hand. Burman did not gain much on the amateur, who came into the stretch for the last time with three lengths advantage. Then he suddenly slowed and Burman passed him like a flash, landing the helmet comfortably while the Fiat rolled home second. It was said spark plug trouble put an effective brake on the Fiat. The time of Burman was 3:37.24, which was outside record.

The 1-mile trials opened the card and while six cars had a whack at the mark, none touched it, the fastest being Bragg in the Fiat, who turned the distance in :39.50. Harroun in the Marmon six was second with :41.05; Kerscher in the Darraq did :43.38; Aitken in the National 70, :44.36; Lytle in the American, :46.05, and Kincade in the National 60, :46.55.

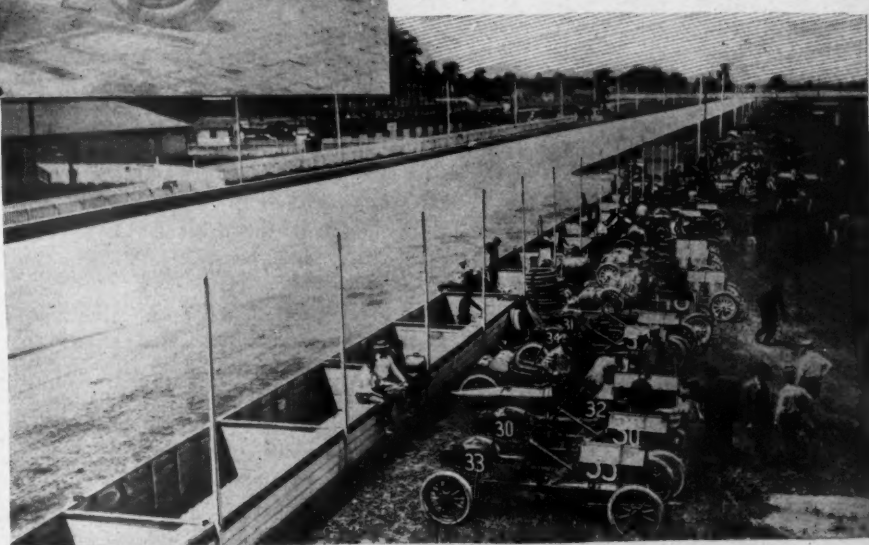
The 160 inches and under 5-mile race was called off because of a lack of entries, while the running of the 161-230 class at 5 miles was delayed while the Buick people were debating whether they would start their model 10s after the Pardington decision



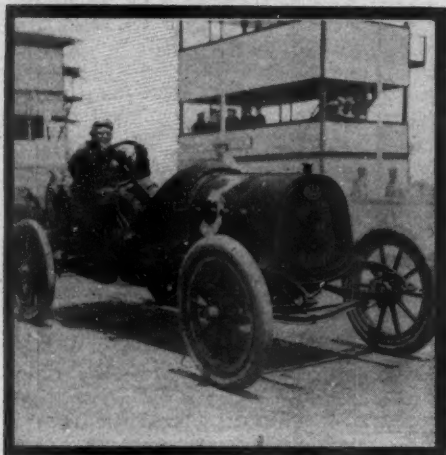
AMATEUR BRAGG IN FIAT

same trouble experienced by Harroun—valve tappets. It sounded the death knell to the Marmons' hopes, for neither Dawson nor Harroun figured in the fight from this point on. Harroun never got past 80 miles and at 90 miles Kincade had the lead with Merz almost 2 minutes behind, while Lynch had worked up past Dawson. This order prevailed at the end, the decision going to Kincade in 83:43.12; Merz second in 85:44.15; Lynch third in 88:41.07, and Dawson fourth in 93:53.27.

Next in importance but producing keener sport than did the Prest-O-Lite event was the 5-mile free-for-all for the Indianapolis



GENERAL VIEW OF HOME STRETCH AND REPAIR PITS



FOX IN THE POPE-HARTFORD

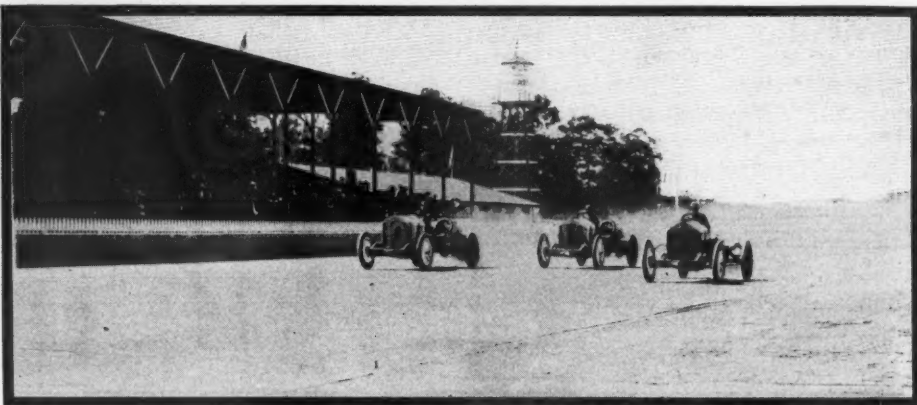
involving the other members of the Buick family. However, when the starter's whistle was blown Chevrolet and Burman were on the line along with Frayer in a Firestone-Columbus, Edmunds and Endicott in Coles, and Miller in a Warren-Detroit. Chevrolet went away like a shot from a gun and the result never was in doubt. That little Buick seemed to have wings and it made the two circuits of the track in 4:41.77, which is record for the class. The Endicott Cole was the runner-up, while the Firestone came in for the small end of the purse.

In the 231-300 class race at 10 miles Harroun in the Marmon four slashed the class record from 9:03.18 to 8:16.08 and showed the way home to Dawson in the other Marmon, while the Fox Pope-Hartford was third. Besides these three Scheifler in a Jackson, Clark in a Cutting and Tinkler and Anderson in Marions started.

The 5-mile 301-450 class saw a beautiful finish in which Kincade in a National 40

## COMPLETE SUMMARY OF THE RESULTS OF RACING ON FRIDAY

FIVE MILE STOCK CHASSIS, CLASS B, 161-230						
No.	Car	Driver	2½ mi.	5 mi.		
36	Buick 10	Chevrolet	2:21	4:41.77		
6	Cole	Endicott	2:35	4:57.82		
4	Firestone	Frayer	2:40	5:01.71		
26	Warren-Detroit	Miller	2:49	5:28.04		
35	Buick 10	Burman	2:59	5:44.74		
5	Cole	Edmunds	3:04	5:34.96		
TEN MILE STOCK CHASSIS, CLASS B, 231-300						
No.	Car	Driver	5 mi.	10 mi.		
33	Marmon	Harroun	4:14	8:16.08		
34	Marmon	Dawson	4:15	8:16.13		
3	Pope-Hartford	Fox	4:20	8:31.9		
20	Cutting	Clark	4:44	9:16.7		
15	Jackson	Scheifler	4:44	9:16.8		
25	Marion	Anderson	4:45	9:16.6		
24	Marion	Tinkler	5:01	9:58.75		
FIVE MILE STOCK CHASSIS, CLASS B, 301-450						
No.	Car	Driver	2½ mi.	5 mi.		
10	National	Kincade	2:10	4:05.76		
31	Marmon	Dawson	2:09	4:05.97		
30	Marmon	Harroun	2:10	4:06.22		
9	National	Aitken	2:10	4:06.88		
11	National	Merz	2:11	4:08.00		
16	Jackson	Lynch	2:28	4:35.75		
TEN MILES STOCK CHASSIS, CLASS B, 451-600						
No.	Car	Driver	2½ mi.	5 mi.	7½ mi.	10 mi.
9	National 40	Aitkin	2:17	4:23.74	6:25	8:25.94
10	National	Kincade	2:17	4:43.68	6:25	8:26
11	National	Wilcox	2:17	4:25.09	6:26	8:26.27



THREE NATIONALS IN THE 451-600 CLASS RACE

## RECORD OF THE DRIVERS

	First Place	Second Place	Third Place	No. Starts
Bragg	5	1	0	6
Harroun	4	2	3	10
Kincade	2	5	3	16
Aitken	4	1	6	19
Greiner	2	0	2	7
L. Chevrolet	2	0	0	3
A. Chevrolet	0	0	0	1
Burman	1	1	0	5
Oldfield	3	0	0	6
Wilcox	1	0	1	3
Kerscher	1	4	0	7
Dawson	1	4	0	8
Reed	1	0	1	2
Endicott	0	1	0	5
Tousey	0	3	0	4
Merz	0	2	2	7
Herr	0	1	0	3
Lynch	0	2	1	9
Frayer	0	0	2	4
Fox	0	0	2	6
Clarke	0	0	2	5
Anderson	0	0	1	6
Lytle	0	0	0	4
Edmunds	0	0	0	3
Miller	0	0	0	6
Scheifler	0	0	0	2
Tinkler	0	0	0	3
Motsinger	0	0	0	4
Kelnaw	0	0	0	3
Ellis	0	0	0	4
Clemens	0	0	0	1
Bisbee	0	0	0	2
Roberts	0	0	0	2
Schwitzer	0	0	0	3
Keene	0	0	0	1
Faulkner	0	0	0	1

just nipped Harroun at the tape, there being 20-100 second time between the two when the judges dropped their eyes on the line. Kincade came from behind in the run home and deposed Harroun when he seemed to have a cinch. Dawson in the other Marmon, Aitken and Merz in Nationals, and Lynch in a Jackson were the other starters.

Aitken, Kincade and Wilcox in Nationals were the only ones to come out for the 451-600 class at 10 miles and that is the order in which they finished, the affair being interesting because of the friendly rivalry existing among the drivers. It was Wilcox's first race, he being Aitken's mechanic.

The free-for-all handicap and the 5-mile amateur brought Arthur Greiner, of Chicago, into prominence with his National. Greiner defeated Tousey in the amateur event and the pair in the handicap, which was at 5 miles, ran one, two, Greiner having 30 seconds and his mate 35. In the handicap Kerscher in the Darracq was scratch and thirteen cars started.

The tire situation, previous to the speedway races, was one of the biggest problems encountered. It had been widely rumored

## RECORD OF THE CARS

	First Place	Second Place	Third Place	No. Starts
National	9	12	13	59
Marmon	5	6	4	22
Fiat	5	1	0	6
Brush	3	1	0	9
Knox	3	0	0	5
Darracq	1	4	0	6
Stoddard-Dayton	1	0	1	2
Jackson	0	2	1	18
Cole	0	1	0	6
Pope	0	0	2	6
Cutting	0	0	2	14
Firestone-Columbus	0	0	2	4
Warren-Detroit	0	0	0	6
Marmon six	0	0	0	12
Empire	0	0	0	4
Hupmobile	0	0	0	2
Westcott	0	0	0	2
Great Western	0	0	0	1
Herreshoff	0	0	0	2

## TIME TRIALS ON FRIDAY

Record trials at 1 mile, class D cars—

No.	Car and driver	Time
14	Fiat 90, Bragg	:39.50
32	Marmon six, Harroun	:41.05
54	Darracq, Kerscher	:43.38
8	National 70, Aitken	:44.36
2	American, Lytle	:46.05
7	National 60, Kincade	:46.53



## COMPLETE SUMMARY OF RESULTS OF RACING ON FRIDAY

FIVE MILES, STOCK CHASSIS, CLASS B, 161-230 CLASS				
No.	Car	Driver	2 1/2 mi.	5 mi.
36	Buick	Chevrolet	2:21	4:41.77
6	Cole	Endicott	2:35	4:57.82
4	Firestone	Frayer	2:40	5:01.71
26	Warren	Miller	2:49	5:28.04
35	Buick	Burman	2:59	5:44.74
5	Cole	Edmunds	3:04	5:34.96

FIVE MILES, STOCK CHASSIS, CLASS E, AMATEUR				
No.	Car	Driver		5 mi
48	National	Greiner	4:09.30	
47	National	Tousey	4:22.34	

FIVE MILES, FREE-FOR-ALL OPEN RACE, MOTOR SPEEDWAY HELMET				
No.	Car	Driver	2 1/2 mi.	5 mi.
41	Buick 100	Burman	1:54.27	3:37.24
14	Fiat	Bragg	1:52.3	3:43.25
8	National 70	Aitken	2:01.7	3:54.93
2	American	Lytle	2:04	3:54.93
32	Marmon six	Harroun	2:04	3:52.35
7	National 60	Kincade	2:11	4:22.51

FIVE MILES, CLASS D, FREE-FOR-ALL HANDICAP				
No.	Car	Driver	Handicap	5 mi.
48	National 40	Greiner	:30	3:44.9
47	National	Tousey	:35	3:45.90
45	Stoddard-Dayton	Reed	:30	3:49.17
1	Empire	Motsinger	1:20	3:55.68
11	National 40	Herr	:20	4:01.66
3	Pope-Hartford	Fox	:25	4:01.92
8	National 70	Aitken	:15	4:06.25
16	Jackson	Lynch	:30	4:08.58
25	Marion	Anderson	:35	4:08.75



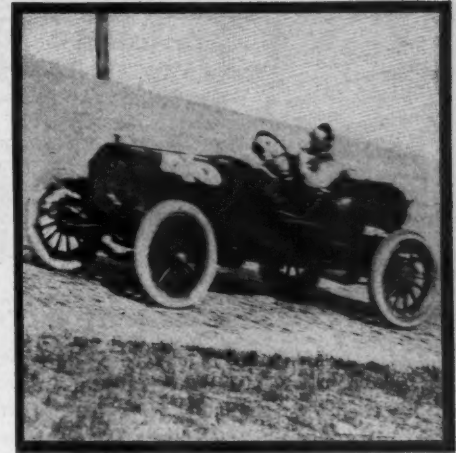
LINEUP FOR THE INDIANAPOLIS MOTOR SPEEDWAY HELMET RACE

that the track was exceedingly hard on tires and previous to the opening a score of Overland test cars had been employed to drag blocks of cement over the surface in order to smooth it. The races, however, proved that the track is not particularly injurious to tires. Harroun and Lynch, using Michelins, went through the Schieber without a change.

On the other hand, the National and Buick, which finished third and fourth, used the same make of tires and had tire difficulties. The Buick had torn the tread completely off of the right rear at 25 miles; Aitken's National lost the right rear at practically the same distance, the complete tread having come off. Oldfield, using Firestone tires, threw the right rear on the twenty-sixth mile. It was at this distance

that the greatest tire difficulties took place, and it seemed as if some cars would have to stop every 25 or 30 miles to change a rear tire. Burman's model 100 Buick lost a left rear at 40 miles, and Kerscher's National car stopped with one-half the tread torn off the right rear at 42 miles.

After this first series of tire troubles the stops due to this cause were fewer. Chevrolet in a model 100 Buick changed the right rear at 64 miles. At 120 miles Merz changed both front tires on his National. Oldfield changed his right rear at 150 miles. The Pope-Hartford changed a right rear at 170 miles. This is practically the complete tire story of this race. Michelins won the first places in this race, as well as in the 100-mile Prest-O-Lite trophy run on Friday. In the 50-mile Remy race on



OLDFIELD IN THE KNOX SIX

Monday no changes of tires were made. In Monday's events Michelins and Firestones shared honors in the championship races, Barney Oldfield using Firestones on his Knox car, as well as on his 200-horsepower Benz. Michelin tires were used on the Marmon, National and Buick cars which won the championship events. Statistics concerning the competing cars follow:

Car No.	Name	No. of cyl.	Bore	Stroke	Cap.
1	Empire	4	3 1/2	4	153.9
2	American	4	5 1/2	5 1/2	571.3
3	Pope-Hartford	4	4 5/16	5 1/2	290.4
4	Firestone	4	4	4	201.1
5	Cole	4	4	4	201.1
6	Cole	4	4	4	201.1
7	National	6	5	5	588
8	National	6	5	6	606
9	National	4	5	5 11/16	446.6
10	National	4	5	5 11/16	446.6
11	National	4	5	5 11/16	446.6
12	Westcott	4	4 3/4	5	354.4
14	Fiat	4	4 1/2	4 1/2	286.3
15	Jackson	4	4 1/2	4 1/2	354.6
16	Jackson	4	4 1/2	4 1/2	354.6
17	Jackson	4	4 1/2	4 1/2	354.6
18	Jackson	4	4 1/2	4 1/2	354.6
20	Cutting	4	4 1/2	5	318.1
21	Cutting	4	4 1/2	5	318.1
22	Cutting	4	5	5 1/2	431.9
23	Fuller	4	4	4 1/2	226.2
24	Marion	4	4 1/2	4 1/2	286.3
25	Marion	4	4 1/2	4 1/2	286.3
26	Warren-Detroit	4	4	4 1/2	226.2
27	Hupmobile	4	3 1/4	3 3/4	124.4
28	Herreschoff	4	3 3/4	3 3/4	134.2
29	Gt. Western	4	4 1/2	5	283.6
30	Marmon	4	4 1/2	5	318.1
31	Marmon	4	4 1/2	5	318.1
32	Marmon	6	4 1/2	5	477
33	Marmon	4	4 1/2	4 1/2	286.3
34	Marmon	4	4 1/2	4 1/2	165.6
35	Buick	4	3 3/4	3 3/4	165.6
36	Buick	4	3 3/4	3 3/4	165.6
37	Buick	4	4 23/64	5	298
38	Buick	4	4 23/64	5	298
39	Buick	4	4 1/2	5	318.1
40	Buick	4	4 1/2	5	318.1
41	Buick	4	6	5 1/4	593.7
42	Buick	4	6	5 1/4	593.7
43	Buick	4	4 1/2	5	318.1
44	Buick	4	4 1/2	5	318.1
45	Stoddard	4	5 1/4	5 3/4	497.8
46	Knox	6	5	4 3/4	559.5
47	National	4	5	5 11/16	446.6
48	National	4	5	5 11/16	446.6
51	E-M-F	4	4	4 1/2	226.2
52	E-M-F	4	4	4 1/2	226.2
54	Darracq	4	4	4	226.2

## PREST-O-LITE TROPHY, 100 MILES, 301-450 STOCK CHASSIS, CLASS B, MINIMUM WEIGHT, 2,000 LBS.

No.	Car.	Driver.	Bore X Stroke.	10m.	20m.	30m.	40m.	50m.	60m.	70m.	80m.	90m.	100m.
10	National	Kincade	5 x 5 1/4	8:19	16:08	25:54	33:48	41:40	52:12	60:11	68:02	75:51	83:43.12
11	National	Merz	5 x 5 1/4	8:18	16:09	24:22	34:36	42:38	50:40	61:08	69:13	77:26	85:44.15
16	Jackson	Lynch	4 1/2 x 4 3/4	8:43	17:06	25:32	34:07	43:02	54:08	62:56	71:33	79:58	88:41.07
31	Marmon	Dawson	4 1/2 x 5	8:12	15:01	24:20	32:30	40:28	48:22	56:17	64:19	72:16	80:53.27
30	Marmon	Harroun	4 1/2 x 5	8:10	15:58	24:18	32:28	40:44	49:14	57:47	66:14	74:44	83:18
3	Pope-Hartford	Fox	4 1/2 x 5 1/4	8:34	Out	Broke steering knuckle							



Published Weekly  
**CLASS JOURNAL COMPANY**  
 1200 Michigan Avenue  
 CHICAGO  
 New York Office, 239 West 39th Street

**MOTOR AGE**

Subscription Rates  
 United States and Mexico  
 per year, \$3.00  
 Other countries including  
 Canada, \$5.00

Entered as Second-Class Matter September 19, 1899 at the  
 Postoffice at Chicago, Illinois, under Act of March 3, 1879

## Speed and Strength

**T**HE question is often asked, What does a manufacturer do in order to get so much more speed out of a stock car when stripped to a skeleton chassis than when fitted with its regular body? A complete answer to this question would, so far as many Motor Age readers are concerned, settle the endless query as to what really is a stock model. Cars have been seen to travel at 60 miles per hour one month, which was their limit, and the next month the same car weighing the same, and with the same cylinder sizes, be able to travel 70 miles per hour and a week or 2 later be able to make almost 75 miles per hour. These are real facts and the question is, How is it possible to accomplish such results? The how of accomplishing such results is the great benefit accruing to those who have followed high-speed racing on speedways and have made a thorough study of what it has been possible to do. One way in which higher speeds have been obtained is to increase the speed of the crankshaft in revolutions per minute. At the Indianapolis race meet one or more cars with 5-inch stroke had the crankshaft revolving at practically 2,600 revolutions per minute for continuous miles. This crankshaft speed is phenomenal when it is considered that a few years ago a speed of 1,500 revolutions per minute was looked upon as too high. It is also possible to increase motor speed by careful adjustments in the carburetor and also by reducing the diameter of the piston which is permitted in the definition of a stock chassis. By slightly reducing the piston diameter it may be argued that the compression is lowered, but the drivers do not mind if the compression is reduced to 40 pounds because with the high crankshaft speed there is but little loss from this source and the advantages gained are considerable.

**B**UT with changes as already stated it is still impossible to get much higher speed in the motors and more has to be done. Another scheme which is being used by several makers is that of employing a very low gear reduction between the crankshaft and the rear axle. On several cars in the recent Indianapolis meet a three-to-one reduction was used. This seems impossible to many makers, yet it is a fact and to this gear reduction many of their victories were directly accountable. With this low gear reduction the high motor speed is possible. But with high speed in the motor there is the essential of good power and this is being obtained by some makers by the use of a very low grade of gasoline, Baume reading. Some use 56, whereas others employ 86. It is a fact that a 56 gasoline will give more power than an 86, although starting will be more difficult with the 56.

**I**N cars which are entered in events in which it is not necessary to use strictly stock parts considerable license is being taken at the present time. A favorite one is that of reaming out the valve cages in order to give more space for the gases to enter by as well as offering a freer passage of the exhaust. In addition to this many makers with bevel-seated valves have cut the beveled seating away to a remarkable degree so that the valve weight is reduced and higher valve speed permitted. A favorite method of increasing motor speed, where stock parts are not required, is to drill holes in the lower part of the piston in order to reduce its weight. In some cars the pistons below the wrist pins are filled with holes, so that one would think they would fall to pieces if they fell to the floor, but as a matter of fact sufficient strength remains and the reduction in weight vastly decreases the vibration of the motor at high speeds. This reduction in weight is carried into the connecting rods.

## The Stock Car Status

**W**HEN Referee A. R. Pardington announced through the press the evening before the opening of the meet at the Indianapolis speedway that the stock car definition would be enforced to the letter and that half a dozen or more entries would be debarred from the stock car ranks nothing short of an earthquake was threatened by several manufacturers, but the action of the referee was all the more important and will have the most salutary effect on the stock car status in racing circles. Last season cars competed in many events as stock cars, yet these cars were not listed in the regular catalogue of the company and were not kept on sale in the regular branches and agencies of the company. The feeling was generally shared among the other manufacturers that the status of the stock car definition was being evaded and in order that racing this season might have that approval which it deserved the contest board of the A. A. A. and also the Manufacturers' Contest Association decided to nip the trouble in the bud. The debarring of several cars had a disastrous effect on several of the classes in the speedway races, but the general effect will be for the bettering of racing in this country for this season.

**T**HIS Indianapolis episode brings to the front the matter of stock cars and the stock car definition as printed in the present racing rules. To the ordinary reader a stock car is the car he can buy at any of the branches or agencies and at the price listed in the catalog or through the advertisements. To that person owning a motor car in southern Texas a stock car is not a special model of which only one has been made and of which more may be built during the coming year. A stock model has been defined as one of which twenty-five must have been built before it can compete in any contest, and of which a certain percentage of the entire season's output must have been built as the season progresses.

**I**T must not be interpreted that by such a rule any maker is barred from entering a new model in any contest. Special provision has been made for such a contingency by adding a classification for new models of which perhaps only one has been made and which the maker wishes to test out in races. Such a classification fills an important place in the racing program, but cars competing under such a classification have no right to be known as stock cars or advertised as such. Through deception in advertising much damage has been done to the motor industry and it is to be hoped that this year the matter of advertising matter following victories will be carefully followed and that those concerns not advertising in strict accord with the results will be disqualified from future events.

**M**ANY have argued that stock cars fail to attract the public, but the very opposite is the case. The public knows that in the past it has been fooled by cars advertised as stock that were not in any sense of the term stock. The public wants to see raced those models that they expect to buy from the dealer in the town or city in which they live, and at the price catalogued, and are not interested in the performance of a special model which is listed at a vastly higher price. Deception will injure any sport, and the motor sport has suffered badly during the past season because of this. Now that the contest board has taken a rigid stand in the matter, such stand must be adhered to no matter what the expense, and this board should send its technical representatives to the different factories so that the absolute status would be assured.



# GREAT ACTIVITY IN AKRON'S RUBBER MART

COLUMBUS, O., May 30—Developments in the rubber and tire factories here are coming thick and fast and during the past week a number of additions and extensions were planned in the tire factories. Hardly a day passes but what a building of some description is being planned. Although the high price of crude rubber would naturally cause a diminution in the consumption of specialties, still reports indicate a steady increase in the demand for all rubber articles.

The Firestone Tire and Rubber Co. is perhaps at the present time planning the most extensive additions to its plant. Last week a contract was let for a new \$500,000 plant which is designed to be the largest single building in the world for the manufacture of motor car tires. The building is to be completed by the beginning of 1911.

The Swinehart Clincher Tire and Rubber Co. has made tremendous strides since the reorganization of the corporation recently. When the new company took over the plant last September the sales were \$12,000 per month and during the month of April, 1910, the sales amounted to more than \$80,000 and at least \$100,000 is expected for May.

The Star Rubber Co. is just completing a large addition which will double the capacity of the plant. Two buildings were recently added to the plant, each of which were 100 by 50 feet and other additions have been authorized.

The O'Neil Tire and Protector Co. expects to move from its present location in a few weeks to the upper floors of the Adamson Machine Co.'s plant on West Exchange street. The B. F. Goodrich Co. is now making extensive alterations in its plant since completing a number of large additions and the Diamond Rubber Co. also is making some extensive changes. The Goodyear Tire and Rubber Co. is not only erecting additions in Akron, but has also built a factory in Canada, the first American firm to build on the other side of the border.

## Buys Mexican Rubber Plant

Terreon, Mexico, May 28—Another big English company has been organized in London to manufacture rubber from the guayule shrub in Mexico. A short time ago an English company was formed and acquired the large rubber manufacturing plant of Adolfo Marx, at Saltillo, together with extensive tracts of land in northern Mexico upon which the guayule shrub grows. The new company is called the Anglo-Mexican Rubber Estates, Ltd., and it has a capital stock of \$5,000,000 gold. It has purchased the holdings of the Mexican Crude Rubber Co. which embraces two rubber factories, one located at Viesca and the other at Cedral; 160,000 acres of guayule rubber producing land, and 150,000 acres of other land in the states of Durango and Sinaloa. It also controls the guayule

## Additions and Extensions to Tire Plants Are Planned—English Buy Guayule Property

shrub output of 500,000 acres of land for a long period of years. The company expects to manufacture about 1,500 tons of crude rubber a year.

Another new guayule rubber factory has just been placed in operation at Catorece, state of San Luis Potosi. It is owned by J. Escued and E. Dalfond. It has a daily output of 50 tons of rubber. It is stated that the new factory which Escued and Delafond are erecting in Terreon will have a daily output of 75 tons of rubber.

The title of the American purchasers of the Cedros ranch of 2,000,000 acres has been confirmed by the supreme court of Mexico, in a decision just rendered in the City of Mexico. The heirs of Zertuche y Fuentes laid claim to the property and instituted suit for possession of the ranch after it had been purchased by John D. Rockefeller, Jr., of New York, and associates who are also the chief stockholders of the Continental Rubber Co., which is the largest producer of guayule rubber in the world. The Cedros ranch is situated in the state of Zacatecas and embraces 2,000,000 acres of land that is covered with a heavy growth of the guayule shrub. It is conservatively estimated by experts who have

made a careful examination of the property that the guayule shrub upon the ranch is alone worth more than \$10,000,000 gold. The Rockefeller interests purchased the ranch several years ago for \$2,000,000 gold. At that time the manufacture of rubber from the guayule shrub had scarcely passed the experimental stage and the real value of the shrub was not realized. It was then selling for \$10 to \$20 per ton, while it now has a market value of \$200 a ton. The ranch property is operated under the name of Compania Ganadera y Textil de Cedros. A corps of American botanists has been constantly employed upon the ranch for the last 2 years making experiments in the matter of utilizing the various fiber and other wild plants that grow abundantly thereon. These scientists have also conducted exhaustive experiments as to the best methods of propagating the guayule and they have found that it can be successfully grown from the seed. The Cedros land will be used as the chief source of supply for the guayule shrub for the several large rubber factories which are operated by the Continental Rubber Co.

## German Tire Agreement

Berlin, May 20—The four leading tire manufacturing concerns of Germany, the Continental, the Louis Peter, the German Dunlop and the German Michelin companies have recently concluded an arrangement with the German Automobile Dealers' Association which is causing much comment. The tire makers agreed that hereafter discounts from their retail prices would only be allowed to motor car manufacturers, owners of garages and dealers in cars and parts or accessories which have been or are recommended or whose requests are O. K.'d by a car manufacturing concern or a wholesale dealer and who have signed to comply with the rules and regulations of the dealers' association. Renting and taxicab concerns and owners of at least four delivery or commercial vehicles will be allowed dealers' prices provided they also sign the association's rules and regulation contract. Government and military officials also may secure the dealers' prices but their orders will have to be approved by the proper authorities before rebates are made. The principal object of the agreement is to protect the dealers against the undeserved rebates which often have been allowed to concerns or individuals who had no legitimate business, and only bought tires and other rubber goods so long as they could make a good profit. Thus it often occurred that persons which were not dealers supplied goods at a price less than that charged by the regular dealer. The association and its members have pledged themselves not to deal in or handle in any way tire and rubber goods made by other concerns which have not signed the agreement with them.



June 4—Annual hill-climb of Worcester Automobile Club, Worcester, Mass.

June 7-11—Carolina endurance run.

June 11—Annual Giant's Despair hill-climb, Wilkes-Barre, Pa.

June 11—Road races of Portland Automobile Club, Portland, Ore.

June 14—Start of Glidden tour from Cincinnati.

June 18—Track meet of Quaker City Motor Club, Philadelphia.

June 18—Automobile Club of Maryland's hill-climb, Baltimore, Md.

June 18—Hill-climb of Upper Westchester A. C., Ossining, N. Y.

July 1-2-4—Speedway meet at Indianapolis.

July 1-10—Road carnival of licensed dealers at Los Angeles, Cal.

July 2—Reliability run of North Wildwood Automobile Club, Philadelphia.

July 4—Track meet of Motor Club of Wildwood, N. J.

July 4—Track meet of Dallas Automobile Club, Dallas, Tex.

July 4—Track meet of Cheyenne Motor Club, Cheyenne, Wyo.

July 4—Hill-climb of Automobile Club of Auburn, Auburn, N. Y.

July 4—Track meet of Minnesota State Automobile Association, St. Paul.

July 11—Hill-climb of Plainfield Automobile Club, Plainfield, N. J.

July—Hill-climb at Richfield Springs, N. Y.; middle of month.

July—Road race of Grand Rapids Automobile Club, Grand Rapids, Mich.; middle of month.

July 18-23—Milwaukee Sentinel trophy. Tour of Wisconsin State Automobile Association.

## Gossip From the Detroit Factories

**D**ETROIT, MICH., May 31—In the way of new factories, there were five announced during the week, two for Detroit, one for Wyandotte near by, one for Pontiac, and the last for Mount Clemens, about 30 miles northwest. Of the two Detroit plants, one, the Dayton Airless Tire Co., is moving here with 300 to 500 employees from Dayton, O. The company has been reorganized and the capital increased to \$1,500,000, of which \$1,000,000 is common stock, and the other \$500,000 preferred. The reorganized company has options on several sites, two of them in the Boulevard-Chene district and the other at Wyandotte. Colonel J. C. Hooven, of Hamilton, O., a prominent Ohio capitalist, is largely interested, while the following Detroiters will be found in the list of officers or directors: Frank C. Van Dyke, president of the Van Dyke Motor Car Co.; George C. Clark, its treasurer; S. Olin Johnson, of the Penberthy Injector Co.; Wilbur Brotherton, manager of the Jerome B. Rice Seed Co., and others. An entirely new plant will be built, construction starting within a few weeks, while possession and active business operations are scheduled to start next September.

### River Rouge In It

The purchase of a 15-acre tract of land at River Rouge, within the city limits and next to a large plot just purchased by the Standard Oil Co. is said to mean that that part of the city will soon have a large plant. The motor concern has a car in the city, demonstrating its worth, but is said to be asking the town officials to take some \$30,000 worth of stock in its company. The land in question has been bought outright, however, the price being stated to be \$45,000, so that the deal doubtless will be consummated at an early date. This company promises to employ about 100 men at the start, bringing most of them from their present location in Ohio.

At a special meeting of the Wyandotte business men's committee, it was reported that the entire amount of money asked by the Seitz Motor Co., of Detroit, in order to secure the Seitz factory for Wyandotte, has been secured, and that no further obstacles remain in the way of the company's moving.

With a capital stock of \$25,000, the Mount Clemens Garage and Auto Co. has been incorporated to operate, buy and sell motor cars, but it is said that a later development will be the manufacture of a low-priced car. All of the capital stock has been paid in, and work will start at once, the Fairview hotel property having been acquired upon which a large fireproof building will be erected. The board of directors includes such well-known Mount Clemens men as: Charles C. Farrin, Byron R. Erskine, O. C. Lungerhausen, R. J. Stewart, A. W. Schott, S. C. Price, and S. J. Dalby.

The purchase of a 7-acre tract of land at the corner of South Saginaw street and the town line road, Pontiac, by R. F. Munroe, of the Munroe Body Co., is said to mean one more big factory for that town, although Mr. Munroe, when seen, refused to either deny or affirm the report. It is believed to mean the moving to Pontiac of a large factory, in which the body company is heavily interested.

Many of the local factories are already taking an active part in the plans for the industrial exposition, which begins June 20 and lasts until July 6. The Regal company has invited every Regal agent in the United States to attend the exposition as its guest.

That business is not all rosy is shown by the business troubles. Judge Swan issued an order that the properties in the hand of the defunct Watt Motor Co. be turned back to the original owners, by which the Miller-Selden Electric Co. regains possession of a motor, upon which it could not collect. The C. C. Wormer Machinery Co. gains machines and tools valued at about \$7,000.

That the supply of good help is much below the demand is best evidenced by the amount of work being done to secure such men, the advertising columns and other mediums being filled with details of such openings. Just at present there seems to be an unusual demand for draftsmen, which would seem to indicate a good deal of work being done on 1911 models. The Hupp concern is seeking assemblers and engine men; the Packard company, body-builders and painters; the Metzger Motor Car Co., lathe hands, tool designers, machinists, and carpenters; the J. C. Wilson Body Co. and the C. J. Wilson Body Co. are both looking for watchmen, body builders, and painters; at the Brush runabout plant carpenters are in demand; as are machinists and assemblers at the E-M-F plant No. 3; also body-builders at the Yeomans Body Co. More than this, several Cleveland firms are endeavoring to reduce the available supply of men by seeking help here to go to Cleveland.

### Big Agency Deal Made

One of the largest agency deals ever closed was that which was put through by the Chalmers Motor Co. last week, when officers of the company signed up with T. Eaton & Co. for the exclusive Canadian agency. This firm selected the Chalmers after ten cars of this make had been bought in the open market and tried out by members of the firm in their own service. They now have under construction a large five-story building in Toronto, which will be devoted exclusively to motor cars,

while other buildings are to be erected later on in other Canadian cities.

The recently organized Stuart Commercial Car Co. has taken over the plant of the Co-operative Foundry Co. at Junction avenue and the Wabash railway and is already turning out cars. It manufactures 1- and 3-ton trucks, using a 30-horsepower four-cylinder engine, designed by C. H. Brooks. The company expects to turn out 200 cars this year. William M. Walker is president and general manager of the concern. The other officers are: Vice-president, Michael B. O'Connor; treasurer, Alexander F. Walker; secretary, Johnson Stuart.

The Triumph Motor Co., capitalized at \$100,000, has filed articles of association with the secretary of state. The incorporators are: C. W. Taylor, Detroit; Henry G. Dykhouse, Grand Rapids, and Charles M. Owen, Grand Rapids. The company has not announced its plans as yet. It is understood that a plant will be established in Detroit.

### Will Supply Shorts

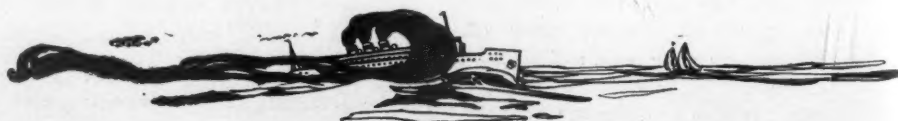
Owing to the difficulties encountered by many local motor car manufacturers in obtaining shorts, the organization of a company to operate a plant here for the express purpose of supplying this demand is being discussed. Several manufacturers have been approached on the subject and have received the suggestion favorably, but the plan has not assumed definite shape.

All the parts makers in the city are working up to their full capacity and still are unable to keep pace with the orders. The Gear Grinding and Machine Co. recently has found it necessary to increase its capital from \$200,000 to \$300,000 to provide for a new building, 65 by 110 and three stories high, at Chene street and the boulevard, which will be ready for occupancy in August.

The Detroit Auto Specialty Co. has increased its capital from \$50,000 to \$75,000.

A number of outside accessory makers have their eyes on Detroit as a promising field for new endeavors. Among them is the Automobile Supply Mfg. Co., of Brooklyn. L. Rubes, president of the company, together with his general superintendent, is now in the city looking for a site for a proposed motor horn factory.

The Anhut Motor Car Co. has been reorganized within the past few days. William Walker, of Walker Brothers, caterers, becomes president, succeeding John N. Anhut, who will be vice-president and manager of the sales department. Charles E. Hinkle was elected secretary. An inventory taken May 1 shows assets of \$157,982.80 and liabilities of \$63,056.92. Mr. Anhut made a flying trip to Toledo last





week and returned with contracts for 410 Anhut six cars and options on 440 more in his inside pocket. The contract was made with the Ohio Motor Sales Co., of Toledo.

The Anhut Motor Car Co. has as its Pacific coast representative R. C. Durant, only son of W. C. Durant, head of the General Motors Co., with which the Anhut concern has no connection. The young man is only 19 years old, but is making good as a salesman, in spite of his tender years. Mr. Durant is now visiting his father in Flint.

The purchase by the Joy Realty Co. of 300 feet of choice frontage at Woodward avenue and the West Grand boulevard, directly opposite the large sales building being erected for the Ford company has given rise to a report that the Packard Motor Car Co. is getting ready to follow Mr. Ford's example. Henry B. Joy, president of the Packard, is also largely interested in the realty company; hence the rumor.

#### Rumors of a Combination

Persistent rumors connect several of the smaller motor car companies, particularly those doing an assembling business, with the formation of a smaller combination to fight the larger companies and obtain their rights. No definite arrangements have been made as yet, but it is understood that two of the smaller companies and one parts manufacturer have signified their intention of coming into the combination.

The latest branch to be established in Detroit is that of the Pennsylvania Rubber Co., which has interested Detroit capital, has been reorganized and will have an office at 882 Woodward avenue. Herbert Duperry, president of the Crucible Steel Co., is president. Seneca G. Lewis is general manager, C. C. McCullough is the New York manager, while George E. Coble, formerly representing the company in the middle west, will be in the Detroit office. J. F. French, formerly located here, will have charge of the business on the Pacific coast for the present. The Pennsylvania tire factory will remain at Jeanette, Pa., it is announced.

#### BOOMING BEACH MEET

Galveston, Tex., May 28—For the purpose of creating a further interest in the race meet to be held on Galveston beach late in July, Captain J. W. Munn, president of the Texas State Automobile Association and chairman of the committee having arrangements for the meet in charge, will make a tour of nearly all the large cities of Texas in his car. He will leave Galveston within a few days and expects to meet the Glidden tourists when they reach Dallas about June 25.

## Stoddard Joining United Motors

DAYTON, O., June 1—The Dayton Motor Car Co., manufacturer of the Stoddard-Dayton cars and also owner of the Courier company, building the Courier car, has become a part of the United States Motor Co., complete details of which transaction will be closed by the end of the week. The first rumors of this deal which is now in progress were afloat 10 days ago, but long before that time the negotiations had been under way. As with all other companies which have been absorbed by the United States Motor Co., there will be no change in the Dayton Motor Car Co., its name being retained, its car status remaining as at present and, as far as known, there will be little change in the controlling executives.

The exact consideration of the absorption of the Dayton company has not been made public. Reports in Indianapolis were current during the speedway meet to the effect that the United States Motor allowed \$4,500,000 for the Stoddard and Courier interests, the entire payment being in stock in the United States Motor Co. This report further stating that J. W. Stoddard will undoubtedly become vice-president of the United States Motor Co., and in such case the general management of the Dayton Motor Car Co. would rest with J. E. Edwards, at present engineer and factory superintendent of the Dayton company. The Dayton company this year will manufacture, all told, 3,500 cars, 2,500 being Stoddard-Daytons and 1,000 Courier machines.

Now that the organization is complete, the roster of the United States Motor Co. shows that it comprises a total of sixteen plants, now built or building. These are: Maxwell-Briscoe Co., five—two at Providence, two at Tarrytown, one at Newcastle; Dayton Motor Car Co., three—two Stoddard-Dayton and one Courier at Dayton; Brush Runabout Co., two—both in Detroit; Briscoe Mfg. Co., two—one in Detroit, one in Newark, N. J.; Alden Sampson Mfg. Co., two—one in Pittsfield, Mass., one just started in Detroit; Columbia Motor Car Co., one in Hartford, Conn.; Gray Motor Co., one in Detroit.

These sixteen plants now employ 12,500 men, which will be increased to nearer 17,000 for 1911. This large number of employes will be needed to care for the enormous production, relative to which Benjamin Briscoe, the head of the enterprise, is quoted as follows: "We expect to produce between 50,000 and 60,000 cars for 1911, or a total business of approximately \$55,000,000, the employes at the Columbia plant being doubled, those at the Dayton being increased to such number

as will enable us to double the number of Courier cars now turned out, while all of the other factories will be correspondingly increased."

The new Detroit plant of the Alden Sampson Mfg. Co., which will be the real headquarters of the power wagon end of the United States Motor Co., will consist of one long single-story building of reinforced concrete construction, with a smaller separate office building. The main shop building will be 1,000 feet long by 175 feet wide. Commenting on the Detroit situation, Frank Briscoe said: "In the various Detroit plants, we will employ over 6,000 men by the first of the year. We are going to build a great big addition to the Brush plant on Oakland avenue, that will be shaped like a letter U. Each leg of this will be 1,050 feet long, and the connecting link 450 feet long, the whole structure being 152 feet wide, one story in height."

#### OVERLAND CASE SETTLED

Indianapolis, Ind., May 31—A compromise has been agreed upon between J. N. Willys, president of the American Motor Car Sales Co., and Thomas P. C. Forbes, Jr., of New York city, and Henry F. Campbell of this city, who brought suit a few days ago demanding an accounting of the company. Under the terms of the compromise, Mr. Willys will purchase the stock held by the two disgruntled stockholders, which will give him all but 243 shares of stock in the sales company and the Willys-Overland Co. It is stated that the two stockholders will receive \$1,000,000 for their holdings.

All of the companies in which Mr. Willys is interested will be reorganized under the name of the Willys-Overland Co. of Toledo, with an authorized capitalization of \$2,000,000. Of this amount \$800,000 worth of stock will be issued to the Overland Automobile Co. of Indianapolis, which will be taken into the new company. As soon as the settlement has been made, which probably will take place within the next week, the stockholders will dismiss the suits filed last week in the county and federal courts here. In the suit filed by Forbes he demanded a receiver, alleging mismanagement on the part of Mr. Willys, and asserting that the American Motor Car Sales Co. was in danger of insolvency. Mr. Willys states that the charges made in the complaints were utterly without foundation.

Miss Blanche Stuart Scott, who with Miss Amy Phillips, is making a motor trip from New York to San Francisco in an Overland car, reached Indianapolis on the evening of May 29, attending the Memorial day races at the speedway. Twenty cars from the Fisher Automobile Co., Indianapolis agent for the Overland, met the young women near Greenfield.





GENERAL VIEW SHOWING CARS LINED UP FOR AMATEUR HILL-CLIMB

## Only Amateurs In This Hill-Climb

NEW YORK, May 28—The first scheduled event of the Amateur Automobile Contest Association, a hill-climb staged on Anderson's hill, near Harrison, N. Y., was held Saturday afternoon. There were four fixed events and a motor cycle contest for which policemen in that branch of the service were eligible to enter. Aside from the four officers who took part in that event, the participants in the racing were all wealthy young men who drove their own cars.

The scene of the contest is a beautiful spot about 2½ miles from White Plains. The course, laid out over a splendid roadway, was exactly 1 mile. The start was on a straight, level bit of ground about 300 yards long, where it swerved to the right and climbed a long hill whose steepest grade was 11.25 per cent. The average grade of the whole mile was 5.81 per cent. At the top of the hill there was another swerve to the right and passing a series of reviewing stands, the contestants dropped down a short, sharp grade to the finishing line. The course led past the Oliver Harriman and Whitelaw Reid estates and in the crowds of spectators were many persons of national importance and prominence.

The climbs were strictly for amateurs and all of them proved to be stirring contests. The fastest time made during the afternoon was by G. B. Lambert in his Simplex 90, who won the free-for-all event in 1:03 flat. George W. Quintard, III, in a Simplex 50 captured the vice-president's cup for the high average made in two or more trials. This trophy was given by Richard M. Jesup. In addition to that prize, Mr. Quintard was second in event No. 3, for class C, subdivision 5, cars with piston displacement of from 451 to 600 cubic inches. The class cup, presented by C. A. Fowler, Jr., for the fastest time made in classes 1, 2, 3, 4 and 5, was taken by S. E. Wishart in a Mercedes. The Git-a-Horse cup, presented by J. G. Wilson for the slowest time made by any car in the

climb, was won by Mr. Wilson himself in his Lancia in 1:44½ in the running of the free-for-all. The course was policed by members of the fire departments of neighboring towns and was done with praiseworthy efficiency: Summaries:

Class C, subdivisions 1, 2 and 3; open cars with piston displacement to and including 300 cubic inches:

Car and driver	1st try	2d try
S. P. O. Thomas N. Cook.....	1:19½	1:16½
E-M-F, H. C. Sierck.....	1:23½	1:23½
Chalmers, A. W. Page.....	1:33½	1:32
Chalmers, W. M. Quimby.....	1:29½	1:29
Lancia, C. M. Chauncey.....	1:25½	1:24½
Lancia, J. G. Wilson.....	1:32½	1:32
Lancia, A. E. Gallatin.....	1:28½	1:25½
Premier, J. Thompson.....	1:34½	1:31½

Class C, subdivision 4; open to cars with piston displacement of 301 to 450 cubic inches:

Car and driver	1st try	2d try
Speedwell, H. A. Weatherbee.....	1:13½	1:12
Rainier, P. G. Grant.....	1:16	1:20½
National, J. M. Rutherford.....	1:05½	1:05½
Cleveland, R. M. Jesup.....	1:23	1:20½
Buick, C. H. Jackson.....	1:13	1:10
National, C. D. Goddard.....	1:21½	1:18

Class C, subdivision 5; open to cars with piston displacement of 451 to 600 cubic inches:

Car and driver	1st try	2d try
Locomobile, J. R. Johnson.....	1:32½	1:21½
Mercedes, S. E. Wishart.....	1:07½	1:05
Simplex, G. W. Quintard, 3d.....	1:06½	1:05½
Stearns, J. D. Tooker.....	1:15½	1:13½
Simplex, C. A. Fowler, Jr.....	1:35½	1:14½
Palmer-Singer, N. Fowler.....	1:22	1:17½

Free-for-all, class D; one trial only:

Lancia, J. G. Wilson.....	1:44½
Rainier, P. G. Grant.....	1:24½
National, J. M. Rutherford.....	1:06

Cleveland, R. M. Jesup.....	1:22½
Mercedes, S. E. Wishart.....	1:04½
Simplex 50, G. W. Quintard, 3d.....	1:04½
Stearns, J. D. Tooker.....	1:11½
Palmer-Singer, N. Fowler.....	1:16½
Simplex 90, G. B. Lambert.....	1:03
Locomobile, J. R. Johnson.....	1:37

### HILL-CLIMB IN TEXAS

San Marcos, Texas, May 26—An event that attracted the attendance of motorists from San Antonio, Austin and a number of other towns and localities of this section took place here today. It was a hill-climbing contest. More than 400 cars were present, and the crowd was a large one. The cars were run over a course in the upper part of town. The incline was a little more than ¼ mile long and was very steep at two places. Summaries:

#### CARS, \$801 TO \$1,200

Car and driver	Time
Hudson 20, Heffernan.....	:38
Courier 20, Cullen.....	:43

#### CARS, \$1,201 TO \$1,600

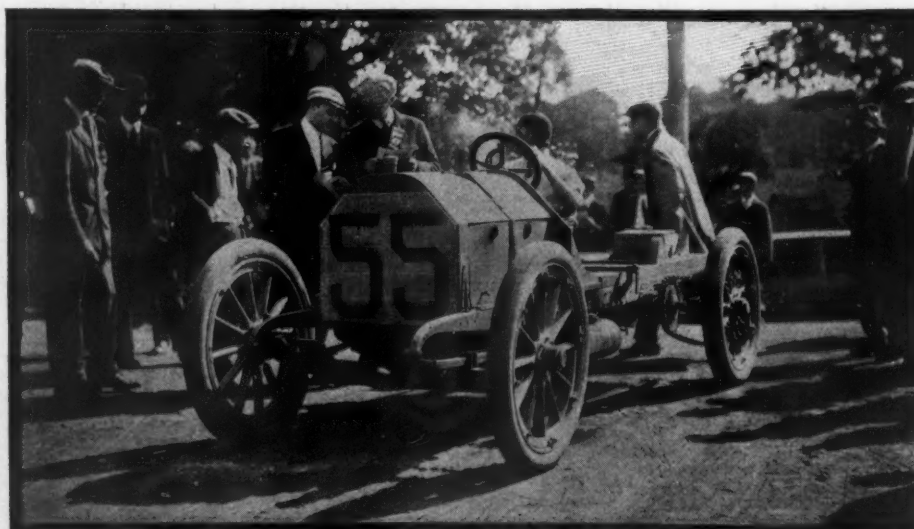
Buick 19, Sutton.....	:31
Kisselkar 30, Cullen.....	:35

#### CARS, \$1,201 TO \$2,000

Buick 16, Daugherty.....	:31½
Kisselkar 40, Cullen.....	:34
Jackson 40, Holmes.....	:34
Marion 40, Dunn.....	:34½
Kisselkar 40, McConnehaen.....	:36½
Oakland 40, Monroe.....	:39½

#### CARS, \$2,001 AND OVER

National 40, McNay.....	:31½
Marmon 32, Barnes.....	:31½



S. E. WISHART'S MERCEDES, WINNER OF FOWLER CUP IN AMATEUR CLIMB





LOCOMOBILE DRIVEN BY J. R. JOHNSON IN AMATEUR HILL-CLIMB IN NEW YORK STATE

Jackson 50, Holmes.....	:33%
FREE-FOR-ALL.	
National, McNay.....	:29%
Buick 16, Daugherty.....	:31%
Marmon 32, Barnes.....	:33%
Jackson 50, Holmes.....	:33%

#### MAKING A MODEL HIGHWAY

New Orleans, La., May 29—Seven miles of the model military road which is being constructed from the populated portion of the city to Chef Menteur, its extreme southeast boundary, will be turned over to the city government for maintenance June 1. It is 14½ miles from the business district of New Orleans to the Chef. Completion of the first 7 miles represents 2 months' work by a gang of convicts whose services were given free to the Motor League of Louisiana by the state. While the league will formally give the completed section of the road into the custody of the city, it will see to its up-keep. This first section of the road will be split into two divisions. A negro with a pair of mules and a drag will be made responsible for each of the divisions, and will be required to drag the road daily, keeping it in ideal condition for motorists. This road leads from the city's paved avenues to Louisiana's most famous hunting ground.

## Good Roads Tour Attracts Many

NEW YORK, May 30—More beautiful, more enchanting, more exhilarating; beautiful because of its unexcelled and ever-changing scenery, enchanting because of its mountains, rivers and excellent highways, and exhilarating on account of its perfect clear air and hemlock and pine essence—this, in brief, is what will make the good roads tour over the national highway which leaves Atlanta on June 6 popular. Scenic as other tours may have been, no route ever laid out in this country should appeal more strongly to the motorist than that over the national highway between Atlanta and New York.

The lover of nature and the motorist who is fascinated with a 1,000-mile trip of 7 days' duration could not ask for a better route than that recently laid out by the Columbia pathfinder. The entrants will find mile after mile of beautiful macadam roads.

Among the mountain ranges which will be crossed are the Alleghenys, Blue Ridge and Appalachians. The route leads through the most historic sections

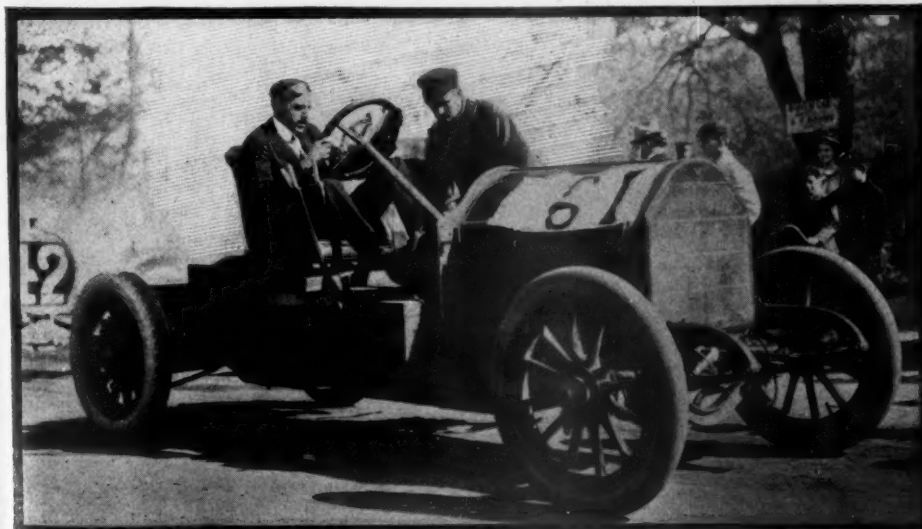
to be found in this country and the battlefields of Gettysburg, Antietam and other sections made famous by the civil war affords an unlimited amount of interest for he who cares for things patriotic and historical.

The route down the Shenandoah valley through the green fields of Virginia and lying at the foot of the Blue Ridge mountains is one of the most beautiful drives imaginable. The roadway is excellent, the greater part of which is macadam, while other stretches are excellent dirt roads. The probable route is as follows:

First day—Atlanta, Ga., to Anderson, S. C.  
Second day—Anderson to Charlotte, S. C.  
Third day—Charlotte, S. C., to Martinsville, N. C.  
Fourth day—Martinsville, N. C., to Staunton, Va.  
Fifth day—Staunton to Gettysburg, Va.  
Sixth day—Gettysburg, Va., to Philadelphia.  
Seventh day—Philadelphia to New York.

The New York Herald and Atlanta Journal, under whose auspices the second good roads tour is being held, deserve much credit for the enthusiasm which those two papers have awakened throughout the sections that the highway extends. Never in the history of good roads movements in this country has there ever developed such keen rivalry among competing towns to get the national highway through their section. Private subscriptions have been raised for the building of good roads and through North and South Carolina they have been building since last year mile after mile of good highways. Red clay soil is being replaced by macadam and good dirt roadways, while previous to the laying out of the national highway many sections through the Carolinas were practically impassable.

When the Columbia scouts made their return trip from Atlanta to New York, it was during the wet season and on account of several days' rain the roads in sections were in deplorable condition. Road commissioners who have the supervision of these bad stretches of roads have promised that the highways will be in perfect condi-



G. E. LAMBERT'S SIMPLEX, WHICH MADE BEST TIME ON ANDERSON HILL

tion when the tour reaches these points. The trip over the Blue Ridge and Allegheny mountains is an exceptionally fascinating one and much to the surprise of the Columbia scouts, the roadway over the mountain is in excellent condition, due to good drainage and a sandy soil, which soon sheds the water. An altitude of 2,400 feet will be reached and as these high points are ascended, the view down into the valleys beneath is one of grandeur and admiration.

Going over the mountains the wildest scenery is encountered. One gets right close to nature between Martinsville and Roanoke and the scenery changes with kaleidoscopic effect. With overhanging cliffs above and fertile valleys beneath, watered by numerous streams which are fed by small brooks seen trickling down the mountain sides, the ride is as fascinating as the most exacting could ask. The route leads through the famous moonshine district and unbeknown to the motorists they will pass scores of mountain distilleries where the famous moonshine whisky is produced.

#### BLAZES THE SENTINEL ROUTE

Milwaukee, Wis., May 30—Contestants in the first annual Wisconsin tour for the Milwaukee Sentinel trophy, under the auspices of the Wisconsin State Automobile Association, will travel one of the most difficult routes ever laid out for a motor car, according to M. C. Moore, president of the W. S. A. A., who has just returned from the pathfinding tour in a Rambler. It took Mr. Moore 7 days to blaze the trail for the 5-day tour. Difficulties encountered at this time, however, will not be faced by the contestants because the pathfinding was done in the month of May and the tour will be run July 18 to 23 inclusive. The roads which were in poor condition when the pathfinder passed will be entirely different for the tour. Winona, Minn., will not be included in the route because of wretched roads. The longest run will be on the fourth day, when 210 miles will be covered in the trip from Chippewa Falls to Appleton. The first night control will be Madison; the second, LaCrosse; the third, Eau Claire-Chippewa Falls; the fourth, Appleton, returning to Milwaukee on the fifth day. A schedule of 20 miles an hour will be maintained.

#### HUGHES SIGNS CALLAN BILL

New York, June 1—Governor Hughes signed the Callan bill yesterday. The bill provides for the registration of motor cars and the licensing of chauffeurs, and it is estimated that the revenue to be derived from its operation will be in the neighborhood of \$1,500,000 annually. The new law goes into effect August 1 and after this year the licenses are to be payable February 1. Three convictions for violation of the speed law will render the offending chauffeur's license void for 6 months.

## Buffalo Uses New Hill Formula

BUFFALO, N. Y., May 29—An innovation in hill-climbing contests which gives promise of revolutionizing the present methods of conducting that popular class of motor sport was inaugurated at a contest which was held just outside of Forestville, N. Y., yesterday afternoon under the auspices of the Dunkirk, N. Y., Observer. The new system was originated with the idea of giving all cars, regardless of horsepower, cylinder and piston equipment, an equal chance in such contests, and the result of yesterday's event clearly demonstrated the feasibility of the arrangement. No better illustration of this can be had than in the fact that the best score of the contest was made by a 20-horsepower Ford, which carried off the main trophy of the day.

The contest was up the long and steep Sheridan hill at Forestville, a grade which is conceded by motorists in this part of the country to be one of the most difficult to mount in this section of the state. The hill is about  $\frac{1}{2}$  mile in length and at different points rises at an angle greater than 45 degrees. The contest was limited to gasoline motor cars either owned or sold in northern Chautauqua county, all cars to be equipped ready for road use with the exception that tops and glass fronts might be removed. There had been twenty-two entrants for the contest, but only thirteen of these actually competed in the climb itself.

The method of handicapping was arranged by E. D. H. Caldwell, chief engineer of the Chautauqua Motor Co., and in brief was as follows: The cylinder volume of each car was multiplied by the actual number of seconds required to make the run up the hill in the first contest. Then from that was subtracted the total points gained by the same car in a second contest, the hill being divided into sections, so that a car was awarded 500 points for covering the first section of

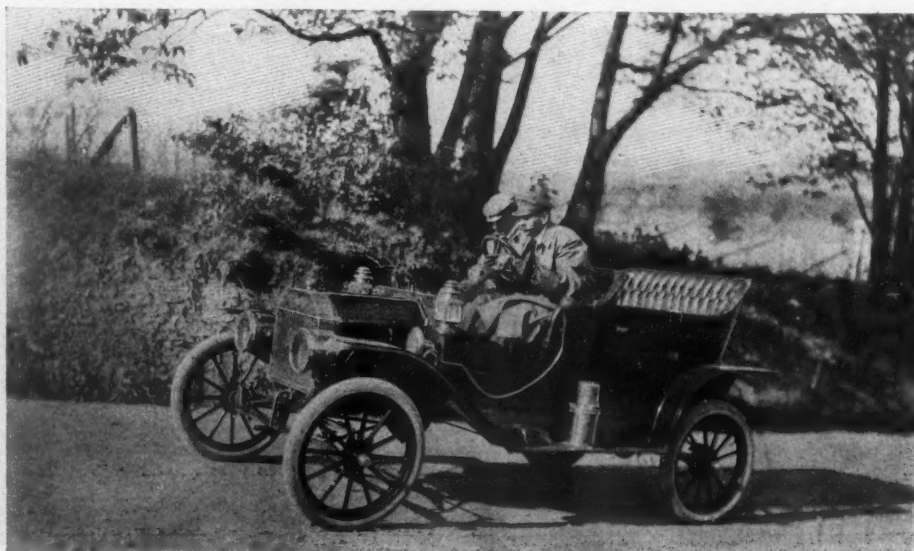
500 feet on high gear, 3 points for each foot of the second section, 5 points for each foot in the third, 8 points for each foot in the fourth, 10 for each foot in the fifth and 25 points for each of the remaining 10 feet at the top of the hill. The car which at the end of the two contests, by subtracting the points gained in the second contest from those received in the first, had the smallest score was the winner. The scheme was well tested yesterday and met with the approval of all the contestants.

The best, or smallest total, score was made by O. F. Fay, driving a 20-horsepower Ford touring car, which had been entered by A. Getlon, the final score for the car being 7891.24; F. C. Carter, driving a 35-horsepower Marion roadster, was second with a total of 12,121.00, while David Goldsmith, piloting his own 18-horsepower model 10 Buick, finished third best with 12,403.34.

An added feature of the event was an exhibition by James C. Barclay of Buffalo in his model K 70-horsepower Thomas in 55 seconds.

#### PRACTICAL ENTHUSIASM

Minneapolis, Minn., May 30—Motor car owners of Pierpont, Day county, S. D., have demonstrated what can be accomplished by a practical good roads campaign. Every morning for the past 2 weeks motorists have left Pierpont in cars for the country roads which lead to the town equipped with picks, crowbars and shovels. In a single day the road running from Pierpont to Webster, a distance of 9 miles, was put in fine condition, holes being filled up, rocks dug out and the road leveled up generally. On another occasion motorists went out and in a few days fixed a fine driveway to Pickerel, a distance of 30 miles. As a result, the little town of Pierpont is approached by one of the finest road systems in the country.



FORD THAT WON UNDER THE FORMULA IN THE FORESTVILLE CLIMB



## Eight Clean in Post Reliability Run

WASHINGTON, D. C., May 31—Special telegram—Eight cars finished the Post touring test run with perfect scores. They were: Division 1 A, Maxwell; 2 A, Buick; 3 A, Moline and Maxwell; 4 A, two Washingtons; 5 A, Oldsmobile, Columbia. Twenty cars competed in the run, which was a grade 3 event, with no technical examination.

The run terminated here this afternoon with every car checking in with perfect road scores. A big reception was accorded the tourists, the parade up Pennsylvania avenue being one of the features. Fair weather followed the tourists from start to finish. There was just enough rain last night to lay the dust. While the roads traversed were fairly good when dry, an hour's rain would have made them impassable.

The noon control at Warrenton, Va., one of the greatest horse-breeding sections in this country, was enlivened by the presence of many horsemen who had their nags out schooling them to the motor cars. This is a very commendable practice that might well be followed by farmers along all routes traveled by motorists.

A Ford dropped out of the clean score

class today, when it received a point for stalling the motor. Forty-four points penalty was sustained by the Hupmobile—10 for work on gasoline leak, 30 for wrapping a broken spring and 4 for motor stops. The Buick truck received 1 point for tightening a high-tension wire on magneto and 3 points for replenishing gasoline. Another Ford was penalized 1 point for repairing a fender, 4 for stalled motor, 1 for cleaning spark plug, 9 for replenishing oil and water. Summary:

Car	Driver	Road Penalties	Technical Penalties	Total
Ford	Miller	0	1	1
Hupmobile	Hamilton	37	86	123
Washington	Carter	0	0	0
Washington	Arrison	0	0	0
Oldsmobile		0	0	0
Regal	Hosmer	770	385	1155
Overland	Graff	0	25	25
Marion	Hall	0	7	7
Moline	Wine	0	0	0
Mora	Fister	0	15	15
Maxwell	Walls	0	0	0
Columbia	Robertson	0	0	0
Maxwell	Rea	0	0	0
Buick	Mortimer	0	0	0
Buick truck		83	93	176
Ford	Drake	0	18	18
Paige-Detroit	Palmer	8	24	32
Buick	Johnston	0	3	3
Elmore	Hardart	*		1000
Amplex	Reed	†		1001

\* Disqualified  
† Withdrawn

### RESULTS OF FORESTVILLE CLIMB DECIDED BY NEW FORMULA

Name of Car	H. P.	Bore	Stroke	Model	Driver	Cylinder volume	Time first contest, seconds	Points first contest	Points second contest	Final score
Ford	20	3 3/4	4	20	Fay	176.7	77 1/2	13,641.24	5,750.	7,891.24
Marion	35	4 1/4	4 1/2	Roadster	Carter	255.3	70	17,871.00	5,750.	12,121.00
Buick	18	3 3/4	3 3/4	10 Surrey	Goldsmith	165.7	86 1/2	14,283.34	1,880.	12,403.34
Pullman	30	4 1/2	32 5	O touring	Mesler	255.8	75	19,185.00	5,750.	13,435.00
Overland	40	4 1/2	4 1/2	42	McDonald	255.3	73	28,848.90	3,660.	14,976.90
Oakland	30	4	4	30	Johnson	318.1	65 1/2	20,835.55	5,750.	15,085.55
Buick	30	4 1/2	5	17	Nichols	318.1	69	21,948.90	5,750.	16,198.90
Pullman	35	4 1/2	4 3/4	K touring	Weikum	302.2	74	22,362.80	5,750.	16,612.80
Overland	42	4 1/4	4 1/2	48	Dodds	198.8	72	18,381.60	940.5	17,441.10
Cadillac	30	4 1/4	4 1/2	Touring	Fay	255.3	97	24,764.10	932.5	23,831.60
Thomas Flyer	40	4 1/4	4 1/2	Flyer	MacDonald	468.3	68 3/4	32,125.38	5,750.	26,375.38
E-M-F	30	4 1/2	4 1/2	30	Edmunds	226.2	83 1/2	18,865.08	524.	18,341.08
Thomas	40	4 1/4	4 1/2	Flyer	MacDonald	468.3	68 3/4	32,125.38	5,750.	26,375.38



HILL JUST OUTSIDE OF FORESTVILLE, N. Y., THAT WAS USED FOR CLIMB

Those who competed in the run declare they got their money's worth. The scenery was magnificent in Virginia and everyone seems well satisfied with the long jaunt.

### First Day's Run to Staunton

Staunton, Va., May 27—At the conclusion of the first day's run of the Washington Post's touring test run from Washington to Richmond and return, it was found that ten of the twenty cars participating had perfect road and mechanical scores. After leaving the Capital City the contestants traversed every known variety of road, the first 55 miles being about as rough and rocky as could be found anywhere. From that point to Staunton, a distance of 109 miles, the roadway is a fine macadam pike, marked by a succession of toll gates. However, arrangements were made at the first gate for the payment of toll for the entire distance, the red flag on each car being sufficient to pass it through each gate without stopping. There is no finer route in this country than that found in the Shenandoah valley, an excellent road and beautiful scenery combining to make it a favorite touring ground.

The contest is being run under grade 3 rules of the American Automobile Association, which provide for road and mechanical penalties, but eliminate the outdoor tests at the conclusion of the run. The entry list contained twenty-five nominations, but five declined the issue, leaving twenty to battle for the honors. A number of factory drivers are participating, including Harry Walls and A. E. Rea, with Maxwells; Bert Robertson, Columbia, and Frank Hosmer, Regal.

The Regal was the first car to sustain an accident. About 30 miles out of Washington a nut was sheared off the differential, necessitating the boring out of a bolt. This was an all-day job, and when it was finally completed it was nearly dark. The driver made up his mind to reach Staunton and drove all night to do it. The car sustained a penalty of 760 points for being late into Staunton, but its mechanical score has not been determined.

The Elmore entered, by Frank Hardart, winner of the Munsey sweepstakes trophy last fall, and driven by his son, had ignition troubles a few miles from Staunton and had to be towed into the night control. For this it was disqualified and a penalty of 1,000 points, as provided in the rules, was given it. The car will continue in the tour as a non-contestant.

The Hupmobile has a perfect road score, but lost a point for stalling the motor, 3 points for replenishing the water supply and 6 points for work on the gasoline pipe. For stalling the motor 1 point was marked against the Marion. The Mora lost 3 points for an adjustment of the motor. One of the Ford entries lost a point for tightening one of the lamps and 2 points for stalling the motor. Five points for an adjustment to the carburetor and 6 points for motor stops was the penalty laid against the Paige-Detroit. One

of the Buick entries lost a point for work on the hood, while a Buick-truck lost 38 points, 31 of which were for being late in the noon control, 3 points for replenishing the fuel and 4 points for work on the car. The Amplex has a perfect mechanical score, but lost a point for being late leaving the noon control. Tomorrow's run will be to Richmond, a distance of 127 miles.

#### From Staunton to Richmond

Richmond, Va., May 29—One-half of the touring test run was completed when the contestants checked in here last evening after a strenuous trip from Staunton. The route was through Rock Fish Gap, one of the hardest roads to negotiate to be found in seven states. A new road is being cut through the gap and is only half completed, but this was the route selected and the tourists had to take it. When completed this will be an excellent road, and the private citizens who have contributed money to build the road are to be congratulated on their public-spirit-edness.

The view from the gap is one long to be remembered. The beautiful valley lying a mile below is one of the most fertile spots imaginable and as far as the eye can see there is a succession of well-tilled fields. The descent from the gap is by means of a narrow winding road, filled with rocks and bumps, and extreme care had to be exercised by every driver. It was impossible to drive more than 6 miles an hour and much time was lost at this point.

The noon control was at Charlottesville, where the University of Virginia is located. The mayor of the town and several of the leading citizens met Referee W. D. West upon his arrival and handed him a verbal bouquet. The latter returned the compliment and then the tourists owned the town. It was tag day in the town and the fair sellers of the tags reaped a harvest from the tourists. At Scotsville, near where former President Roosevelt's hunting lodge is located, a halt was made for 30 minutes in order to enjoy the refreshments provided by the little village. So anxious were the people of this little hamlet to make a good impression on the tourists that they ran a split-log drag over 11 miles of the road in order to make a smooth road for the tourists into their little hamlet.

The Amplex was withdrawn, owing to an accident sustained a few miles out of Staunton. A connecting rod broke, tearing out the crankcase, which effectually put the machine out of running.

The Hupmobile continued to pile up penalties yesterday. It lost 37 points for being late in reaching the night control, 1 point for carbureter trouble, 12 points for stalling the motor, 10 for repairing a spark plug, 6 for replenishing the water supply and 3 for replenishing oil. The Regal had a perfect score yesterday, but the mechanical penalties it sustained the

## Billy Knipper, Driving a Chalmers

first day have not been fixed. Five more points were checked up against the Marion for working on a spring. The Mora hit a rock in the road and smashed a hole in the crankcase. Repairing the break caused a penalty of 12 points. The Buick truck lost 20 points for work on a cotterpin in the valve cage and 3 points for replenishing the gasoline supply. Otherwise it performed well.

The Moline's score is in doubt and the chances are it will be dropped from the perfect-score class. It appears the driver stalled his motor in order to avoid hitting a team, and as soon as the referee can obtain testimony in the matter he will decide whether any penalty shall accrue. For tightening one of his lamps the driver of one of the Fords lost a point and in addition to which 2 points were levied against him for stalling the motor. Twenty points were chalked up against the Paige-Detroit, 8 of them being due to late arrival at the noon control, 10 for tightening the clutch and 2 for motor stops. The big Buick lost 3 points for replenishing the oil supply.

The tourists spent Sunday in a quiet

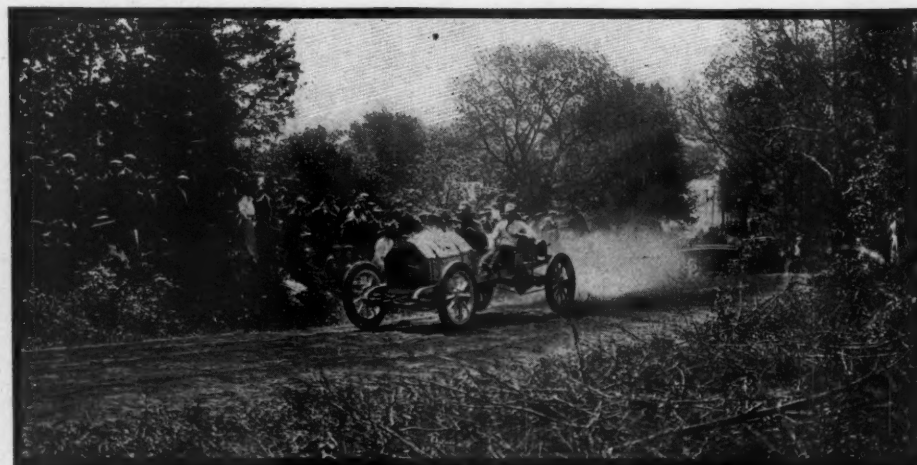
way and obtained a good rest for the next 2 days' journey, which is over many bad pieces of road. The Richmond Automobile Club entertained the members of the touring test run in true southern style and the day was greatly enjoyed by the contestants in the run.

#### Penalties the Fourth Day

Washington, D. C., May 31—Special telegram—The finish of the fourth day's run in the Post touring test run at Locustdale, Va., last night found the Overland eliminated from the perfect-score class. Shortly before the noon control was reached two spring clips became loose. They were replaced in the noon control. For the work done a penalty of 25 points was given. The Marion lost 1 point for a motor stop. The Buick truck lost more points yesterday, a total of 111 being marked against it. Of this 52 were for being late at controls, 1 for magneto adjustment, 55 for ignition trouble and 3 for replenishing oil. For stalling the motor another point was placed against the Paige-Detroit. This was the net results of the day's run, which was only 82 miles.



CROWDS LINED UP AT START OF BRIDGEPORT CLIMB



BILLY KNIPPER DRIVING CHALMERS IN BRIDGEPORT CLIMB



## Fastest in the Bridgeport Climb

The roads ranged from excellent to very bad, but generally the going was fair. About 20 miles of corduroy road were encountered, and held the cars down to their slowest speed. The technical committee met last night and determined the Regal's score. For the first day a total of 1,145 points was levied, 760 for being late at the night control and 385 for work on the differential. For leaving Staunton 10 minutes late, 10 more points were marked against Regal. The committee also placed the Maxwell runabout back in the clean-score class by lopping off the 2 points penalty imposed the second day for work on the oil regulator. The point charged against the Buick was removed.

### RUN FOR DELAWARE MOTORISTS

Wilmington, Del., May 30—The executive committee of the Delaware Automobile Association, at a meeting held at Wilmington, Del., decided to have the annual roadability run of the club on June 18, but as several routes have been suggested by the pathfinding committee, the matter of selection of the route was left open for a few days.

**B**RIDGEPORT, CONN., May 31—Special telegram—While hundreds of people lined the winding ascent of Snake hill at Fairfield the hill-climb of the Bridgeport Automobile Dealers' Association was held on the morning of Decoration day. Although an injunction had been brought against the association by Frederick Sturges, the New York millionaire, the climb was successful in every sense of the word.

Although the steep hill was well soaked with the early-morning rain the cars made good time. William Knipper, piloting a Chalmers, made the best time of the day by covering the course in 1 minute 8 seconds. Other cars failed to reach this mark by 7 seconds for the .7-mile course.

Sixty members of the coast artillery guarded the course and no accidents marred the contest, although many narrow escapes occurred at Dead Man's Curve, which was the most perilous of the course. Dean Rankin in a Chalmers made the curves much faster than the other cars, although he lost time on the steep grades.

The climb started promptly at 9 o'clock with events 1, 6 and 7 scratched on ac-

count of no entries, leaving seven to be contested. The first car over the line was a Warren-Detroit driven by J. H. Brooks, which covered the course in 1:59. As the time was announced a cheer went up from the crowds, as the record time was predicted as 2 minutes for any of the events. The Warren-Detroit won event 2 with a Halladay driven by J. J. Kerwin second.

In the third event a Correja, driven by J. Taylor won in 1:41. A Pullman driven by H. P. Hardesty was second in 1:48½. The fourth event was easily won by a Pullman driven by J. J. Schenck in 1:34¼. A Stoddard-Dayton driven by H. B. Griffin was second in 2:06. Dean Rankin in a Chalmers had no trouble in winning the fifth event in 1:18. He drove one of the finest races of the day and made the curves without lowering speed, at times making them by skidding.

The free-for-all event furnished the most excitement of the day and the crowds went frantic when William Knipper piloted a Chalmers over the course in 1:08¼, making a record for the hill. Rankin in another Chalmers won second honors in the event in 1:15.

The ninth and tenth events were for one and two-cylinder motor cycles respectively. New Haven men won both events. G. A. Wildman the first in 1:26½ and P. H. Cox second in 1:13¾.

In the evening at the Stratfield silver cups were presented to the winners of the events and general good feeling prevailed. The dealers' association felt that the climb had been a great success and the drivers were well satisfied with the result. Summaries:

CARS \$851 TO \$1,250		
Car	Driver	Time
Warren-Detroit	Brooks	1:59
Halladay	Kerwin	Scratched
CARS \$1,251 TO \$1,600		
Correja	Taylor	1:41
Pullman	Hardesty	1:48½
CARS \$1,601 TO \$2,000		
Pullman	Schenck	1:34¼
Stoddard-Dayton	Griffin	2:06
Buick	McMullin	Scratched
Vellie	Brooks	Scratched
CARS \$2,001 TO \$3,000		
Chalmers	Rankin	1:18
Atlas	Knox	Protested
FREE-FOR-ALL		
Chalmers	Knipper	1:08¼
Chalmers	Rankin	1:15
Correja	Taylor	1:45½
Buick	McMullin	1:36
National	Smith	Scratched
Stoddard-Dayton	Griffin	Scratched

### REGAL PLUGGER IN KANSAS

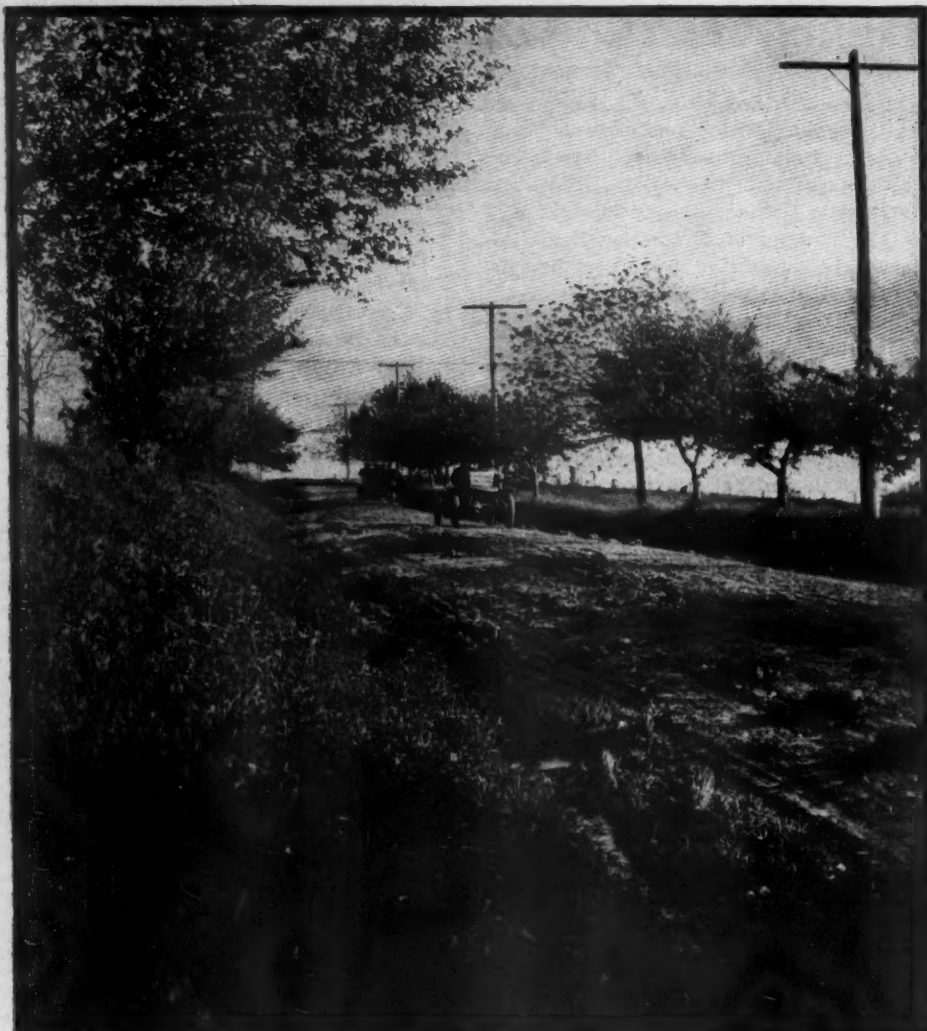
Wichita, Kas., May 30—Special telegram—The Regal Plugger arrived here at noon today after 5 days' struggle with Kansas gumbo from Kansas City. Road conditions were unparalleled through this section. Kansas only needs good roads to make it one of the best of motoring states. Great interest is shown everywhere. A surprising number of cars is owned by farmers, who at this time cannot use them on account of the roads. Improved highways will put 10,000 cars into Kansas. Owners throughout the state are working enthusiastically for road improvement.



ONE OF THE BAD TURNS ON SNAKE HILL, BRIDGEPORT, CONN.



CHALMERS DRIVEN BY RANKIN IN BRIDGEPORT CLIMB



SCENERY ON CENTRAL NEW YORK RELAY TOUR NEAR LAKE SENECA

## Central New Yorkers Hold Relay

**B**INGHAMTON, N. Y., May 29—Escorted by upwards of a hundred cars driven by members of the Binghamton and Owega clubs, the fourteen entrants that have made the entire trip in the central New York relay club run reached this city this evening. In the annals of motor events it is probable that nothing just like this run ever has been held in this country and it is also a safe statement to say that perhaps no contest ever held has attracted so much attention or received so cordial support from the vicinity it traversed as this run.

Maybe it was the gorgeous weather, maybe it was good hard work by the promoters, maybe it is an increasing interest in the questions of good roads and fair laws—but more likely it was the very character of the run itself that has awakened the wonderful enthusiasm shown on every hand. But whatever it was it has worked well for the run is a success far beyond the fondest dreams of those most interested in its promulgation.

This for the fact that up to the present time—and there are still 2 days to run—more than 150 cars have participated in

the holding of the run. It has been conclusively proved that owners are keen for cross-country tours properly gotten up and arranged so that they are real sociability

events rather than tradesmen's contests. The start from Syracuse on Saturday was not as auspicious as it might have been because it rained, and rained hard up till midnight Friday following almost an entire week of rain. But some fifteen cars made the start and at Auburn one more entrant was taken on. From Cortland five more were added to the list of entrants, but through an unfortunate mix-up of road orders twenty cars sent several miles out to escort the Syracuse and Auburn contingents in and through Cortland failed to connect with the party. At Ithaca the entire cortege which was met some miles out by a force of Ithaca club members was escorted to a lunch at the Dutch inn and then out to the Cornell-Michigan baseball game, where they were given parking space along the third-base side lines. After the game, with the Ithacans still escorting, the cars drove to Watkins Glen, which they reached about 7 o'clock, where the night was spent at the Glen Springs hotel.

The first day's run found the earth roads in somewhat heavy condition as a result of the week's rain, but all the cars with one exception got through in fine shape. The stone roads were simply great and there was enough of them to make up for the rather hard work in spots along the earth roads.

Sunday morning after a thoroughly enjoyable tour through Watkins Glen with William E. Leffingwell, of the Glen Springs, in charge the trip was resumed to Elmira. About 10 miles out some six or seven cars, filled with enthusiasts, met the tourists and escorted them to Elmira, where noon dinner was served at the Hotel Langwell in that city.

Then on to Owega, where more than 100 cars from the Owega and Binghamton clubs combined were discovered in waiting. After a brief stay at Owega the cavalcade of cars stretching out for several miles began its trip to Binghamton, which was reached



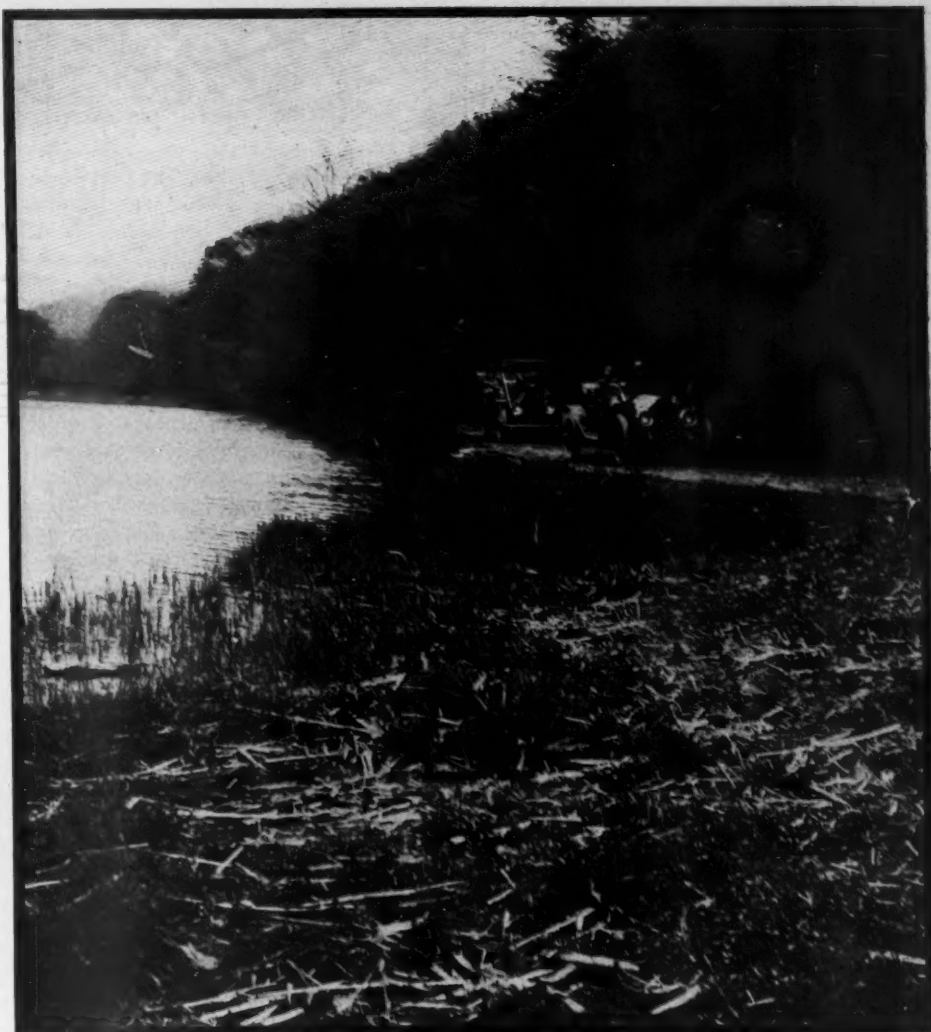
CENTRAL NEW YORK TOUR STARTING FROM SYRACUSE, N. Y.



at about 5:30. Here a most tasty dinner was served to all of the tourists from the other cities and to those of Binghamton who served on the official board of the run. At this dinner, with J. E. P. Clark as toastmaster, addresses were made briefly by William Pierrepont White, the father of good roads in New York state; Frank T. Lyon, of the state highway commission, and J. Arthur Ritchie. Letters also were read from S. Percy Hooker, commissioner of highways of the state of New York; Lewis E. Speare, president of the A. A. A., and Frank G. Webb, president of the state association. This dinner was a happy event from every viewpoint and only served to make the tourists more thoroughly enthusiastic over the fun and enjoyment of the run.

Monday morning the original starters, which probably will be reduced to about ten cars, with some twenty or thirty from the Binghamton and Owego clubs will make the run to Oneonta and Cooperstown. At Oneonta the tourists will be guests of the local club at a luncheon in the municipal building. Then to Five-Mile Point beyond Cooperstown on Otsego lake, where a ride will be enjoyed around the lake on the steamer Mohican. Dinner will be served later at the Five-Mile Point house, after which a searchlight ride and dance will be held on the lake. Then on to Richfield Springs, where the night will be spent. The last day of the run will be through Utica and Rome on into Syracuse.

One of the interesting stunts of the run was furnished by the Willis Motor Car Co., which has furnished a Rapid truck to carry the baggage and extra confetti. This car is maintaining a good schedule and when misdirected on the first day covered 145 miles. The Franklin company has furnished an official and press car. It is the same 1910 six-cylinder car that Carris drove in the all-Connecticut last week. This car is pressed into yeoman's work, too, for after the checker and referee, Howard L. Spohn,



CENTRAL NEW YORKERS FIND ROADS GOOD AROUND WATKINS GLEN

## Enjoyable Form of Competition

has checked out all the cars this Franklin is used to get him into the next station ahead of the contestants to see that they are properly checked in. More than 200

cars have participated in the run so far and everyone has had a most enjoyable time traveling through the state.

### The Third Day's Run

Utica, N. Y., June 1—The third day of hamton through Oneonta and Cooperstown the run which took the tourists from Binghamton into Five-Mile Point inn on Lake Otsego was made in a hard rain which lasted most of the day. Notwithstanding twelve cars continued with the bunch, it was impossible to reach Richland Springs, as had been intended, so the stop was made at the inn over night. A glorious entertainment and banquet and dance were held here.

This day brought out the first accident of the run. In coming around the turn in Oneonta from the country road onto the paved main street T. F. Willis, at the wheel of an Oakland 24, skidded and bent an axle. The axle was taken off, bent straight and the car is on the run today in good shape. The run here was fine this morning, with roads in splendid shape. Even the hard rains have not spoiled the pleasure of the tour. This afternoon Rome and Oneida will be visited, with the finish of the event in Syracuse this evening.



MOTORISTS WATCH COLLEGE BALL GAME AT ITHACA, N. Y.

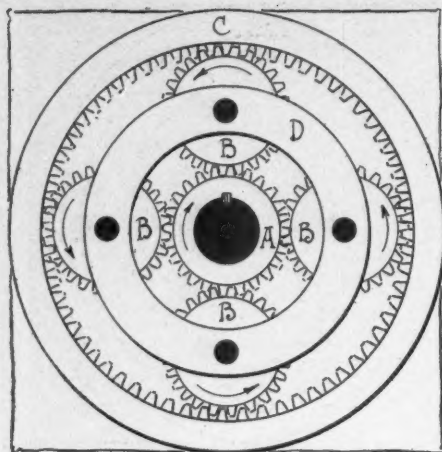


FIG. 1—PLANETARY SET FOR LOW SPEED

## DESCRIBES PLANETARY GEARSET

**BARABOO, WIS.**—Editor Motor Age—Through the Readers' Clearing House will Motor Age explain the two-speed planetary transmission? Would it be a fair rating: to use the following horsepower formula:

$$\text{Horsepower} = \frac{D^2 \times N}{2.5} \times \frac{S}{1000}$$

in which

D=the diameter

N=the number of cylinders

S=the average piston speed in feet

—Herbert A. Gollmar.

In Figs. 1, 2, 3 and 4 the principal and construction of a planetary gearset such as is now in common use on light commercial wagons and runabouts, and which gives two forward speeds and reverse, is illustrated. These illustrations are taken from Roger B. Whitman's book, *Motor Car Principles*. In all the diagrams the pinion gear A is keyed to the engine shaft, the internal gear C, is an integral portion of a drum which is loosely journaled upon the engine shaft, and between the pinion gear A and the internal gear C there are four pinion gears B, in mesh with the gears A and C, that revolve on stub-shafts attached to a spider or flange which is loosely journaled upon the engine shaft. The sprocket to which the driving chain of the car is attached is rotably attached to this spider or flange. Fig. 1 shows the direction of rotation of the various gears on low speed. The gear A revolves at motor speed in the direction indicated by the arrow upon it; the gears B, being the same size, turn at the same speed in the opposite direction. The drum containing the internal gear C is held stationary; thus the spider or flange D, supporting the gears B, revolves in the same direction as the gear A, but as much slower as the difference between the number of teeth upon one of the gears B and the internal gear C. Second or high speed is indicated in Fig. 2. By means of a clutch device, not shown in this illustration, the drum and gear C and the gear A are locked together, so that the gears B are held stationary between them, that is, they do not

revolve on their own axes, but the whole outfit moves as a single compact unit, and the spider D revolves at crankshaft speed. The reverse mechanism, Fig. 3, comprises an entirely separate set of gears in which the drum carrying the internal gear C, is connected to the driving sprocket, instead of the spider D, as in the set described above, and a means is provided whereby the drum supporting the gears B can be held stationary. Therefore, when the drum D is held stationary, and the gears A and B revolve as indicated by the arrows, the internal gear and its drum revolve in an opposite direction to the one on the engine shaft, and reverse speed is obtained. A sectional view of a planetary gearset giving two forward speeds and reverse, is shown in Fig. 4: S being the engine shaft; RP the reverse pinion keyed to the engine shaft; RG the planetary reverse gears; D the drum supporting the reverse planetary gears; RB the clutch band for holding the drum stationary. E is the driving sprocket, which is integral with or rigidly attached to the sleeve A, which is loosely journaled on the engine shaft, and having the internal gear drum for the reverse gear at one end and the spider or flange supporting the planetary pinions of the forward speed gear at the other end. LP is the low speed pinion; LG the low speed planetary pinions; DI the internal gear drum for low speed; LB the clutch band for holding the drum DI; C, the high speed clutch; and K the key of the high speed clutch.

Your formula is fair enough but does not improve upon the old formula:

$$\text{Horsepower} = \frac{D^2 \times N}{2.5}$$

## WAS THE K-W SYSTEM

Chicago—On page 26, Motor Age, issue May 26, an error was made in designating Fig. 3 as "Timing a U. & H. high-tension magneto," and it should have read "Tim-

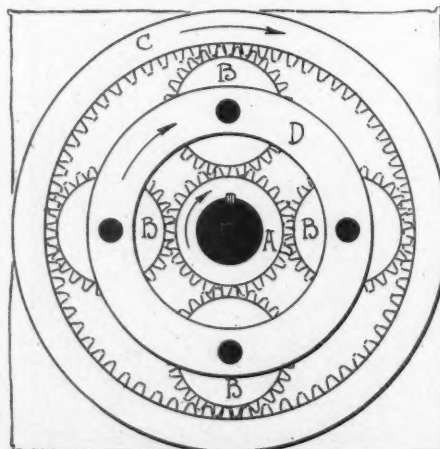


FIG. 2—RUNNING ON HIGH SPEED

# The Readers'

**EDITOR'S NOTE**—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

ing a K-W high-tension magneto." The illustration showed the timing arrangements as used on a high-tension magneto of the K-W Ignition Co., Cleveland, O. In the inquiry headed "Timing High-Tension Magneto" the letters U. & H. appeared and should have been K-W. The K-W high-tension magneto which was placed on the market this season was fully described in Motor Age, March 10, 1910.

## IN THE GENERAL MOTORS

Pittsburg, Pa.—Through the Readers' Clearing House, will Motor Age tell me what motor car companies or factories comprise what is spoken of in the trade as the General Motors Co.? I have heard at times only three concerns mentioned, again eight, and sometimes everything in Detroit and vicinity.—Chauffeur.

Some of the concerns comprising the General Motors Co. are: Buick Motor Co., Flint, Mich.; Cadillac Motor Car Co., Detroit, Mich.; Elmore Mfg. Co., Clyde, O.; Oakland Motor Car Co., Pontiac, Mich.; Reliance Motor Truck Co., Owasso, Mich.; Olds Motor Works, Lansing, Mich.; Rapid Motor Vehicle Co., Pontiac, Mich.; Randolph Motor Car Co., Chicago, Ill.; Grabowsky Power Wagon Co., Detroit, Mich.; Welch Motor Car Co., Pontiac, Mich.

## A. A. A RULE DEFINED

San Marcos, Tex.—Editor Motor Age—As regular subscribers to Motor Age, we take the liberty of asking for a definition of one of the recent A. A. A. contest regulations for 1910 under class A stock car classification, in which there are seven divisions of price classifications running from \$800 and under to \$4,000 and over. The rules say in reference to extra equipment: "Extra or optional equipment, listed in the manufacturers' catalog as such, used upon a car competing under price classification must have its list price added to the list price of the car, and this total price shall determine the classification of the car. No extra equipment shall be permitted other than that listed as such in a manufacturers' catalog." A discussion has arisen in our club as to the exact meaning of the paragraph quoted. A certain group designated as A takes the position that under this paragraph all stock cars entering a competition must have all the extra equipment listed in the manufacturers' catalog for such car, at its list price, added



# Clearing House

**EDITORS' NOTE**—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated

to the list price of the car whether it is used on car competing or not. Thus their contention is that the list price of all tops, windshield, lighting equipment, shock absorbers, etc., which are listed as optional in the manufacturers' catalog must be added to the list price of the car and the total thus obtained determines its price classification.

Group B contends that the proper construction of this rule is that only equipment listed in the catalog which is actually used upon the competing car is to be added at its list price to the list price of the car and that the car's price classification should be determined by adding to its catalog list price the catalog list price of extra optional equipment actually used upon the car while competing. Thus, for an illustration, take a car listed at \$1,500 with magneto and gas lamps, and in the manufacturers' catalog there is listed for this car a top at \$100, a windshield at \$50 and shock absorbers at \$50 or \$200 worth of extra optional equipment. Would the car then compete in division 3A provided it used only the equipment listed at \$1,500, or would the fact that \$200 worth of optional equipment as listed in the catalog raises its class so as to make it eligible only in division 4A—\$1,601 to \$2,000?—R. E. McKie.

If the actual price of the extra equipment listed and carried when added to the list price of the car, brings the car into a higher-priced classification, then the car must compete in the higher class.

## SEEKS MOTOR LITERATURE

Chicago—Editor Motor Age—Will Motor Age in the Readers' Clearing House tell me the price and where to obtain "Harper's Machinery Book for Boys"? On page 27 of the April 28 issue of Motor Age there was a paragraph on this book, but it did not give this information.—Norman Jibsen.

This book undoubtedly can be secured from any of the large book concerns in the city, or may be purchased direct from the publishers, Harper & Brothers, New York, N. Y. The price is \$1.75.

## GUY VAUGHAN'S RECORD

Oakland, Cal.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, inform me if Guy Vaughan ever drove a Decauville car in races?—H. G. Miller.

In 1905 Guy Vaughan established track records for 200, 300, 400, 500 and 600-mile record trials in a 40-horsepower Decauville car in a meet held at Empire City, N. Y. In the same year at Syracuse, N. Y., he established a record for 5 miles, covering the distance in 5 minutes flat. He retired from track racing a year ago.

## WIRING A SINGLE-CYLINDER

Searcy, Ark.—Editor Motor Age—Will Motor Age kindly inform me how to wire a 6-horsepower, single-cylinder marine engine? I have the battery connected but do not know how to run the wire to the two-point Keystone switch. After running the engine I find in the cylinder head and on the spark plug a gray looking substance. Is this carbon, how does it get there, and how can I prevent it? Does it interfere with the running of the engine? Is 88 per cent the best gasoline on the market?—Walter Smith.

Lead a wire from the positive terminal of your battery to one of the points on the switch, lead another wire from the point of the switch to which the lever is connected, to the positive terminal on the coil, lead a wire from the negative terminal on the coil to the commutator, and another wire from the commutator or from some nut on the engine having good electrical contact therewith to the negative pole of the battery. If you had given us the name of your motor and perhaps a little sketch showing the arrangement of the parts we might have given you a diagram which would have helped you considerably.

The gray substance probably is carbon which has been turned gray by some substance contained in the oil or gasoline. Carbon in its natural state is generally black in color. It will do no harm unless the accumulation becomes excessive. You are undoubtedly the best judge as to whether it will interfere with the running of the engine or not, as you are in a position to know how the motor should run

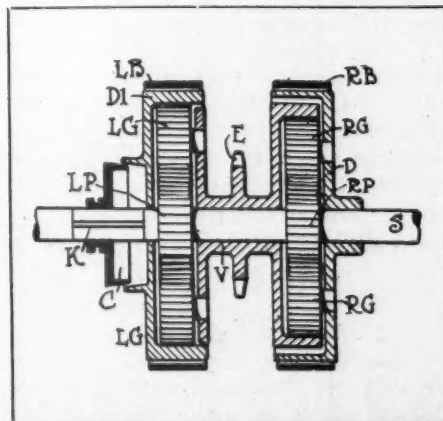


FIG. 4—PLANETARY GEARSET, SECTIONAL VIEW

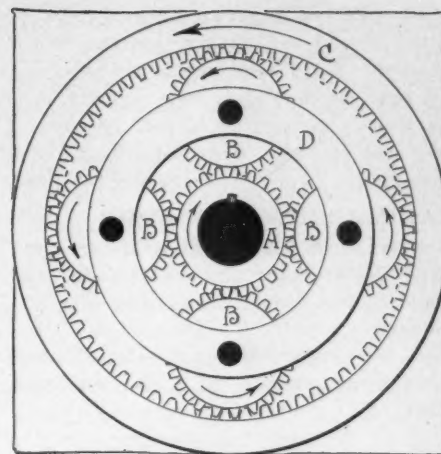


FIG. 3—PLANETARY SET FOR REVERSE

and how it does run; the cleaner the cylinders, the better. Motor Age does not know what you mean by 88 per cent gasoline. If you mean .88 specific gravity, or Baume test, 68 degrees Baume or .70 specific gravity is about the best grade of gasoline to be found on the market, that is, as far as volatility is concerned. Gasoline that would test 88 degrees Baume is exceptionally light and volatile, but impossible to buy on the market; while gasoline that will test .88 specific gravity is very heavy. Gasoline which tests .88 specific gravity would test about 29 degrees Baume. The commercial names of gasoline differ in different places.

## TROUBLE WITH GASOLINE

Iowa City, Ia.—Editor Motor Age—I have an old Winton fitted with a carbureter in which the mixing chamber is composed of seven wire screens, the gasoline dripping down through the screens. At present I cannot get the gasoline to vaporize quickly enough. Can Motor Age suggest a remedy for this?—James Hodgson.

If the screens of which you speak are clean and otherwise in good condition, the parts of the carbureters all properly assembled and adjusted, there is no reason why it should not give satisfactory service unless the gasoline you are using contains water, is stale from long standing or of an exceptionally poor grade. You state that the gasoline does not vaporize quickly enough. Believing that this is an assumption upon your part, and as you do not give any reasons for this assumption a more definite answer can hardly be given. It is possible that your trouble may be due to something else, and if you will state the nature of your trouble perhaps a more satisfactory answer can be given. If you are sure that the trouble lies in the carbureters it would be advisable to send them to the Winton Motor Carriage Co., Chicago, where they can be properly overhauled and adjusted. If you use cold air an improvement will be gained by using hot air from the vicinity of the exhaust manifold. Not knowing the design of this carbureter, it is impossible to

state whether a hot-air jacket could be fitted around the mixing chamber, but if it could the result would be beneficial. If your gasoline does not vaporize it is as already stated due to poor gasoline or not heat enough. With enough heat even low grades of kerosene can be vaporized.

#### FACTS ABOUT THE HUDSON

Northwood, N. D.—Editor Motor Age—Will Motor Age through the Readers' Clearing House answer the following questions:

1—What was the best time the Hudson 20 made at Syracuse, N. Y., September 19, 1909?

2—In the 5-mile race for cars selling at \$1,250 or under, was there a standing or rolling start?

3—Who made the fastest time at that meet?

4—What is the fastest time the Hudson 20 ever made?

5—What does the Hudson roadster weigh?

6—Which has won the most events in 1910, the Ford T or Buick model 10?—P. W. Chantland.

1—The Hudson won the 5-mile race at the Syracuse track meet last September in 5:49½, defeating two Maxwells.

2—The race was from a standing start.

3—The fastest time made at the meet was 25 miles in 25.40 by Barney Oldfield in the Knox six, and two 1-mile trials by the same driver in :53½ and :53½.

4—The Hudson finished fourth in the Massapequa race last fall, its time for the 126.4 miles being 151 minutes 47½ seconds.

5—The Hudson roadster is said by the factory to weigh 1,810 pounds fully equipped.

6—The Buick company maintained a racing team last season, whereas the Ford company did not, hence it is more than probable that the Buick won more races than did the Ford.

#### HORSEPOWER RATINGS

Paducah, Ky.—Editor Motor Age—In the supplement to Motor Age, March 24 issue, giving ratings and specifications of American cars for 1910, I note that all motors having a 4-inch bore and 4-inch stroke are rated the same as those having a 4-inch bore and 4½-inch stroke, namely, 25.6. Why shouldn't a 4-inch bore and a 4½-inch stroke be rated higher than a 4-inch bore and a 4-inch stroke? Are the ratings given in this list the A. L. A. M. ratings?—J. M. Walton.

The ratings in the specification table are those of the A. L. A. M., as a glance at the top of the column will show. There is a prevailing impression in the minds of many motorists that the A. L. A. M. formula does not take the stroke of the motor into consideration. This is an erroneous impression, and it is due probably to the fact that the length of the stroke is not a factor shown in the formula itself. The stroke is considered in this formula, however, inasmuch as the formula

is based on a piston speed of 1,000 feet per minute; not revolutions, but feet per minute. One thousand feet is equal to 12,000 inches. The piston of a motor with a 4-inch stroke travels 8 inches in one revolution, 4 inches up and 4 inches back. The piston of a motor with a 4½-inch stroke travels 9 inches per revolution. Therefore, a four-cylinder motor with a 4-inch bore and stroke will have to make 1,500 revolutions per minute to develop its 25.6 horsepower; whereas a similar motor with a 4½-inch stroke will develop its 25.6 horsepower at about 1,333 revolutions per minute.

#### GEAR RATIO OF BIG BENZ

Los Angeles, Cal.—Editor Motor Age—Will Motor Age kindly answer the following question in the Readers' Clearing House columns:

1—What is the gear ratio of the Benz, driven by Oldfield?

2—How much tire trouble did the Chalmers Glidden pathfinder have?

3—About how many cars are licensed under the Selden patent?

4—How may I secure an A. L. A. M. handbook?

5—What was the mileage of the Croxton-Keeton in the Brighton Beach 24-hour race, and did it have any mechanical troubles?

6—Can Motor Age give the addresses of the following cars: Meteor, Silent Sioux, Correja and Chalfant?—B. J.

1—As near as can be figured the gear ratio of the big Benz is about 1 to 1. The sprockets are 34 to 34 and the bevel gears in the transmission 25 to 29. There are four speeds with direct drive on high.

2—Concerning the tire troubles of the Glidden pathfinder, you are referred to the Chalmers Motor Co., of Detroit, as Motor Age knows nothing regarding this feature of the trip.

3—There were seventy-eight American cars and three foreign machines licensed by the A. L. A. M. up to April 14, 1910.

4—You may secure an A. L. A. M. handbook by writing to the New York headquarters of the association, 7 East Forty-second street.

5—The showing of the Croxton-Keeton in the Brighton Beach race was creditable, it covering 1,004 miles in the 24 hours. Its progress throughout the race was steady.

6—The Meteor is made at Davenport, Ia., by the Meteor Motor Car Co.; the Silent Sioux, at Waukesha, Wis., by the Silent Sioux Auto Mfg. Co.; the Correja, at Elizabeth, N. J., by Van Dewater & Co., and the Chalfant, at Lenover, Pa., by the Chalfant Motor Car Co.

#### WHO MAKES DUMMY RADIATORS?

South Braintree, Mass.—Editor Motor Age—Will Motor Age through the Readers' Clearing House give me the address of some concern that makes imitation radiators for motor cars, also tell me the cheapest and best way of carrying the front axle forward from a position 6

inches back of front of hood, to a position on a line with perpendicular front of hood. The car is an old two-cylinder Wayne fitted with semi-elliptic springs all around. What will have to be done with the steering gear to make this change?—New Subscriber.

Motor Age has no information at hand relative to the manufacture of imitation radiators. As to the cheapest and best way of carrying the front axle forward under the conditions above mentioned, this is a question for some good local repair man, for not knowing the condition of the car and the arrangement of all the parts which would have to be taken into consideration, it is difficult to answer. As it would not be practicable to lengthen the front ends of the frame, new springs of a different design would have to be fitted, the steering rod would have to be lengthened, and the angle of the arms on the steering knuckles would perhaps have to be slightly changed.

#### MOTOR CARS FOR FARMERS

Springfield, Ill.—Editor Motor Age—Makers of motor cars generally are beginning to recognize the possibilities of expanding their business by adapting their product to the needs of the farmer. Prosperous as never before, with a larger crop than in any previous year, at the close of 1909, with high prices for all he raises, the farmer has money to spend, and the farmer with money wants to, and does, live quite as well as his city compatriots, and generally better.

The thing to consider is what type of car will best meet his requirements. First is the question of roads. The country roads are not all graveled highway, or macadamized turnpike. Hence the successful country car must be one that can travel over inferior roads; roads that are sometimes deep with mud, and often covered, a foot or more, with snow. Here the first essential is light weight. Therefore, a good lightweight car should be selected—a car weighing 2,000 to 3,000 pounds is not practical for all-around country service. A car weighing 1,200 pounds would be much better suited to average road conditions. Then, too, this light car easily can travel off the regular roads, over the fields to any part of the farm. A light car also is easier on tires, reduces gasoline and oil bills, and calls for less replacement expense. The next point of importance lies in simplicity of design, accessibility of all parts, and perfect standardization of the same. While the average farmer is a much better mechanic than the city man, due to the long use of agricultural implements, he has no garage to call on for repair work, and must do it all himself. Hence, the less complicated the machinery, the better adapted to the farmer's need.

Any trip—business or pleasure—can be made in very much less time with a car than with horses; in planting, plowing or



harvest time this saving means a great deal when the grain is ripe, or the grass is ready to cut. There is a saving of horses, too; the horse with which the farmer plows all day hardly is fit for a trip to town, or a drive to a neighbor's. If the horses are saved this extra work, they are that much better for the heavy farm work they have to do.

Where other horses are used for driving, the car rids you of them, and while the horse eats whether he works or not, the car requires no attention, except when working. And then a motor car is easily drafted into services of a miscellaneous character. It can be converted into a truck wagon, and will carry its load of milk or produce to the market, if called upon. With a little ingenuity the engine can be made to run the cream separator, saw the wood, or pull a trailer load of grain or house supplies. Then there is the pleasure, after a hard day's work, of a drive in the evening, when at a trifling cost, the whole family spins along 10, 20 or 30 miles; or a trip to the city for the theater, or for shopping. In brief, there are a thousand ways in which the right kind of a car would add to the farmer's welfare. The important requisite is the rightly constructed car for the purpose. It is worth while for the makers to get busy.—J. H. Rockwell.

#### ILLINOIS REGISTRATION LAWS

Manito, Ill.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, inform me where I can get a book on motor car laws in regard to meeting teams, numbers on cars, etc? I wish to know what is required of a motor car owner or driver, and whether a machine has to be licensed or not.—Reader.

Motor Age would advise you to write Secretary of State James A. Rose, Springfield, Ill., for a copy of the Illinois state motor laws, and you will receive free of charge a pamphlet containing the information you desire. Your car must be licensed by the secretary of state, the cost being \$2, which license will continue for 1 year.

#### PROUD OF WISCONSIN

Rhineland, Wis.—Editor Motor Age—Rhineland, situated in the heart of the Wisconsin lakes country, with good sand roads in all directions, is well supplied with motor cars, most of them being of the better class. There are only two or three of the small, low-priced cars like the Ford, and there are many expensive ones, like the Packard, Stoddard-Dayton, Marmion, Kisselkars, both five and seven passenger, Premiers, Buicks in all classes, White steamer, Chalmers, E-M-F, etc. A new road was opened up to this city last fall, coming via Tomahawk, and tourists can come that way on good sand roads, no matter how much it may have rained. The other road, via Parrish, is the most traveled, and in dry weather is really best, but in wet times the clay makes it hard to run. A few days ago, twelve cars made a run

to Merrill, to witness a baseball game. It is expected that a great many tourists from below will take the Rhineland trip this year, as there is an increasing number of visitors every year. Many of them go up among the lakes for a week's fishing.—C. P. Crosby.

#### REMY NON-VIBRATING COIL

Clifton, Kan.—Editor Motor Age—In the answer to question No. 3 of H. A. Gollmar, in Motor Age, issue April 14, it was stated in regard to battery ignition that it was necessary with a direct electric current to use a vibrator to produce induction in the secondary circuit. Is not the Remy non-vibrating coil used with the battery for starting purposes? If so, in what way is it different from the ordinary vibrating coil from which the vibrator has been removed or screwed down?—L. Phister.

In regard to the statement above referred to, the writer would have been more correct if his words had read, circuit-breaker, instead of vibrator; for by circuit-breaker, all forms of this mechanism, of which the vibrator is only one, would have been covered. Yes, the Remy non-vibrating coil is used with the battery for starting, and the circuit is broken by pressing down the little button on the coil-box. The only difference between it and the ordinary coil treated as above mentioned, is that it still contains a means of breaking the primary circuit therein, and thereby inducing the high-tension current in the secondary winding. When the motor is in operation, the circuit breaker on the magneto performs this function.

#### TORQUE IN SIX-CYLINDERS

Wales, N. D.—Editor Motor Age—Will a six-cylinder motor deliver continuous torque, and will it require more fuel than a four-cylinder one?

2—Is starting on the spark injurious to motors?

3—What is the difference between a vibrating and a non-vibrating coil, and which is the better?—Student.

Torque is a tendency to turn or twist and is always present and continuous in all internal combustion motors when in operation, regardless of the number of cylinders, as long as they have a flywheel or its equivalent. Assuming, however, that you fail to discriminate between torque and turning effort, the six-cylinder motor will deliver continuous torque, and constant turning effort as well, and it should not require more fuel for a given horsepower than a four-cylinder motor. Under certain conditions with a six-cylinder motor, there is always a positive turning effort of at least 700 inch pounds on the crankshaft, and at no point in the cycle does it approach zero. On the other hand, with a four-cylinder motor having cranks at 180 degrees, there are four points in the cycle at which there can be no turning effort due to the explosive pressure in the cylinders, but still there is a continuous torque that might amount to about 200 inch

pounds due to the weight of the flywheel. It is for this reason that a heavier flywheel is required on a four-cylinder motor than on a six. The advantages claimed for the six-cylinder motor are that it gives absolutely smooth running, owing to the continuous turning motion, and at the same time, enormously reduces the cost of upkeep, both on tires and on mechanical parts, owing to this regular torque.

2—Starting on the spark is not injurious.

3—The difference between a vibrating and non-vibrating coil is that the non-vibrating coil has no vibrator, the internal construction or wiring being the same in both types. Both have their uses and advantages, and their respective efficiencies depend to a great extent upon the efficiency of the circuit-breaking devices used in connection with them. You use a vibrator coil in connection with a commutator in low-tension magneto or battery ignition. The vibrator is to make and break the primary current in order to induce a high-tension current in the secondary system. A non-vibrating coil is used where a mechanically-operated device makes and breaks the primary circuit and a distributor is used.

#### MAGNETO FOR LIGHTING

Chicago—Editor Motor Age—My first motor car was a two-cylinder opposed machine and the agent and his associates, from whom I purchased it, equipped the machine with a low-tension magneto, friction-driven from the flywheel. The magneto pulley was faced with leather, and as soon as it was filled with oil it slipped, but by removing the leather face and putting in cork, and cleaning the face of the flywheel occasionally with a little gasoline I had no further trouble whatever. This magneto had a governing device which took care of the high speed. The list price of the magneto was \$30 and it not only furnished current for ignition, but ran two lights of 6 candlepower each, and in the 2,100 miles that I ran the machine it never failed except on a run of 24 miles when the leather-faced pulley slipped. Later I swapped and got a four-cylinder car which was equipped with a magneto listed at \$125, and of course I expected great things in the way of ignition, but was greatly surprised when I found that in order to get a good spark even I had to speed up and when I wanted to run slow on high I was compelled to switch to batteries. It will not take long to see which magneto gave the most service. Now, what I really want to say is that a positive-driven magneto with a governing device for speed or excessive current, which will furnish current for ignition and lights is surely in the realm of possibility and would do away with some unsightly gas equipment with the attendant bother of same besides giving us an ideal light. We wish someone who has the ability, inclination and facilities would get busy.—Subscriber.

## Refinements

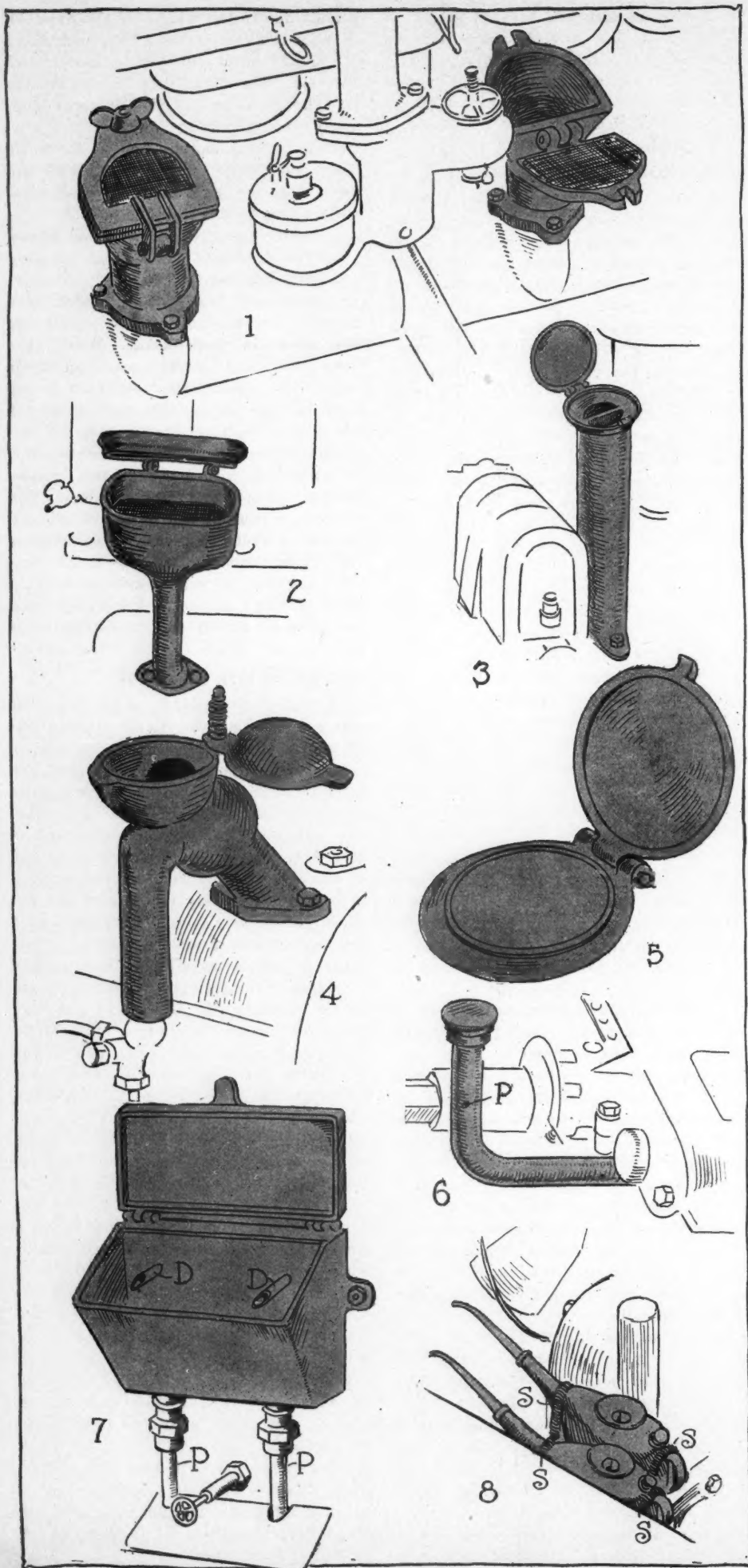
SAYS the poet: "If she be not fair to me, what care I how fair she be." These words, although bearing no reference to a motor car, very clearly express the disposition of many motorists toward the cars they are to drive. There was a time when all that was necessary to sell a car was to demonstrate that it would run. This stage long has been passed, and the motorist must not only be satisfied that the car will run, but, how it runs; and the answer to the question: what are the conveniences provided for its operation, adjustment and maintenance? go far toward influencing the motorist in his selection. The manufacturers have not been slow to realize this disposition of the motoring public, and many are the little things to be found on the 1910 models which add to the convenience of the operator and the efficiency of the product.

One important feature which has received much attention is the arrangement of facilities for conveniently attending to the lubrication of the car and especially the motor. All spring shackles, steering knuckles, and in fact all outboard bearings of the motor, transmission and running gear are provided with grease or oil cups, which in most cases are conveniently located; and realizing the tendency of the motorist to neglect the lubrication and adjustment of those parts which cannot be easily reached, efforts have been made to make the care of unaccessible parts more convenient. On many cars in the past, the provisions for replenishing the supply of oil in the crankcase of a motor, were such that a specially-designed funnel was necessary, or if, perhaps, conveniently placed, the opening of the vent was so small it was at least necessary to carry a funnel about on the car. Nowadays, however, on many cars the vents or breather pipes are so situated and of such generous dimensions, that a funnel is not necessary; and where two breather pipes were fitted, they are now combined into one.

### Breather Pipe Examples

For examples note the size and location of the combined filler and breather pipes illustrated in Figs. 1, 2, 3 and 4. Fig. 2, which was seen on all cars having Rutenber motors has a large cup-shaped opening, provided with a strainer and very accessible. Fig. 1 shows similar facilities on the Matheson, with separate vents for the two compartments of the crankcase. The filler pipe of the Stearns cars, Fig. 3, is of large diameter, in a convenient position, and is divided by a web into two channels, each leading to one of the compartments of the case. This construction enables the driver

MEANS FOR CONVENIENTLY REPLENISHING OIL SUPPLY ON MODERN MOTORS AND GEARSETS:  
1—MATHESON, 2—RUTENBER, 3—STEARNS,  
4—MARHON, 5—WHITE, 6—ALCO, 7—APPERSON,  
8—PEERLESS COMPRESSION HAND OILERS





## on 1910 Cars

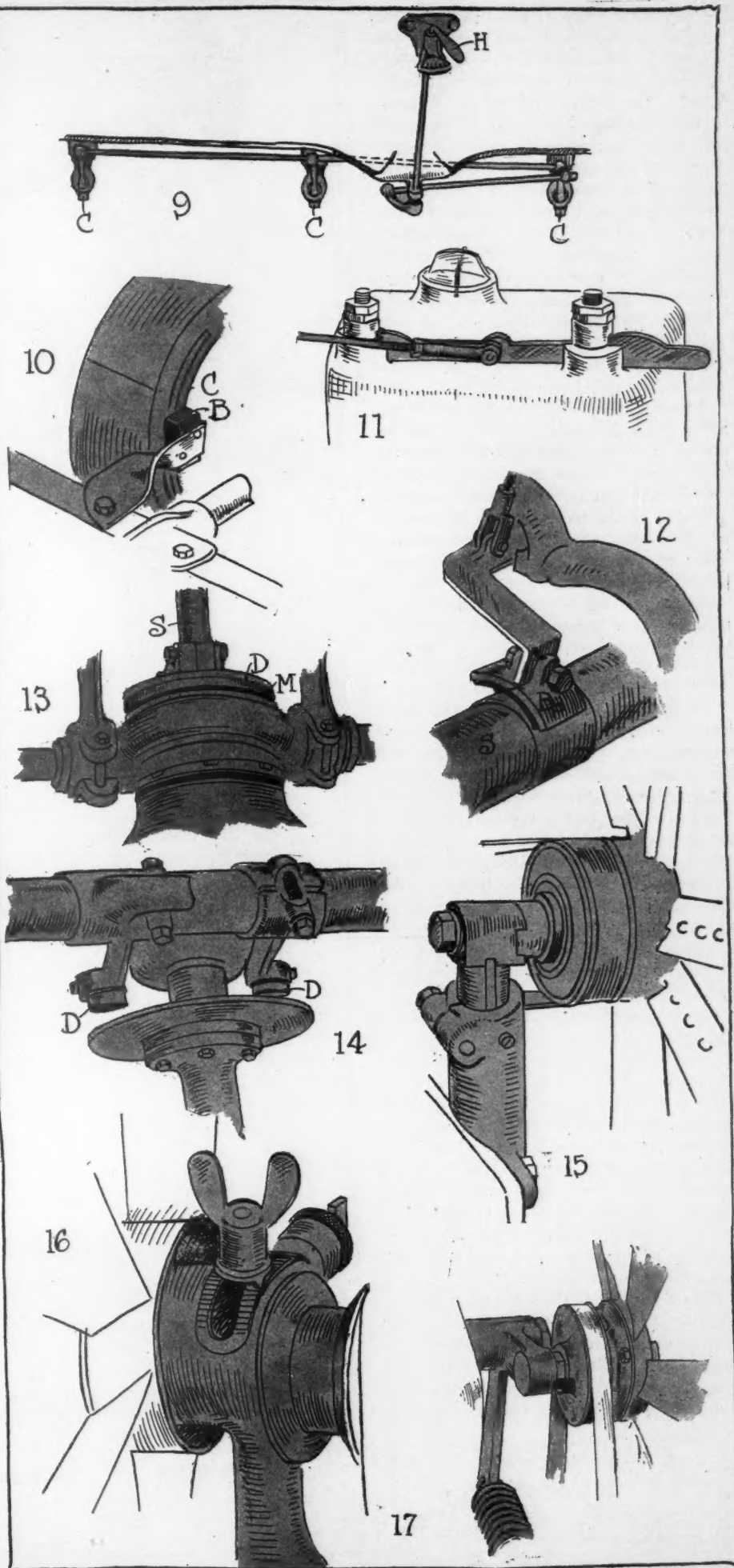
to shift the oil can from one channel to the other without stopping the flow of the lubricant or distributing it about the outside of the motor. Another combination breather and filler pipe which conveniently serves its purpose is to be seen on the Marmon cars, as illustrated in Fig. 4. On the White gasoline cars, the oil reservoir, which is an integral part of the motor, is located just inside the frame in front of the dash; the opening to this reservoir, Fig. 5, is about 4 or 5 inches in diameter, so large, in fact, that there is little slopping about of the oil in filling, however unsteady the operator of the can may be.

There are some cars now in use with their transmission gearsets located under the seat of the car where it is almost impossible to remove the cover for the purpose of replenishing the oil supply without removing or raising the body from the frame; the result is, that the only time the gearset receives any attention is when it gets out of order or when the car is overhauled at the end of the year. Although this is not exactly the case with the Alco cars, they are provided, nevertheless, with a filler-pipe P, Fig. 6, which extends under the footboards where easy access may be obtained to it. Fig. 7 shows a new feature of the oiling system to be seen on the racing models of the Apperson cars. It is a trough serving as a sight when the car is traveling at excessive speed for long distances, during which time the valve below should be open and the extra oil flowing from the ducts D into the trough and then to the crankcase through the pipes P. Replenishing of the crankcase supply from a can may also be accomplished through this trough.

In Fig. 8, a commendable and distinctive feature of the Peerless cars is shown; it consists of two compression hand oilers, located on a leg of the engine and held in place by the coil springs S. Another feature is illustrated in Fig. 9 and consists of a series of reciprocating rods which enable the operator to simultaneously open all three of the petcocks C that drain the oil from the crankcase, by simply operating the lever H which may be conveniently reached on lifting the hood over the motor.

### Clutching Braking Devices

Many cars this year are equipped with clutching braking devices designed to check the momentum of the clutch when shifting gears; four types of these devices are shown in Figs. 10, 12, 13 and 14; and it is claimed that they greatly facilitate gear-changing, protect the teeth of the gears and eliminate much noise. The Speedwell device, shown in Fig. 10, consists of a



LUBRICATION CONVENIENCES: 9—PEERLESS, 11—HUPMOBILE; CLUTCH BRAKES: 10—SPEEDWELL, 12—CHADWICK, 13—STEARNS, 14—MATHESON; FAN-BELT ADJUSTMENTS: 15—MATHESON, 16—LOZIER, 17—CORBIN

fiber block B attached to a flexible bracket secured to the frame; and when the cone clutch C is disengaged from the flywheel the back edge of it bears against the fiber block. The Stearns device, Fig. 13, is comprised of a broad fiber ring D, secured to the clutch shaft S, which, when the clutch is thrown out, bears against a similar ring of metal projecting from the forward end of the gear-case. The Chadwick clutch-brake, Fig. 12, consists of a brake shoe B, which is lined with friction material, and is designed to bear against the clutch-shaft S. It also is arranged to work automatically as the clutch is thrown out; as is the same feature on the Matheson cars, Fig. 14, in which the fiber disks D are brought to bear on the metal plate P.

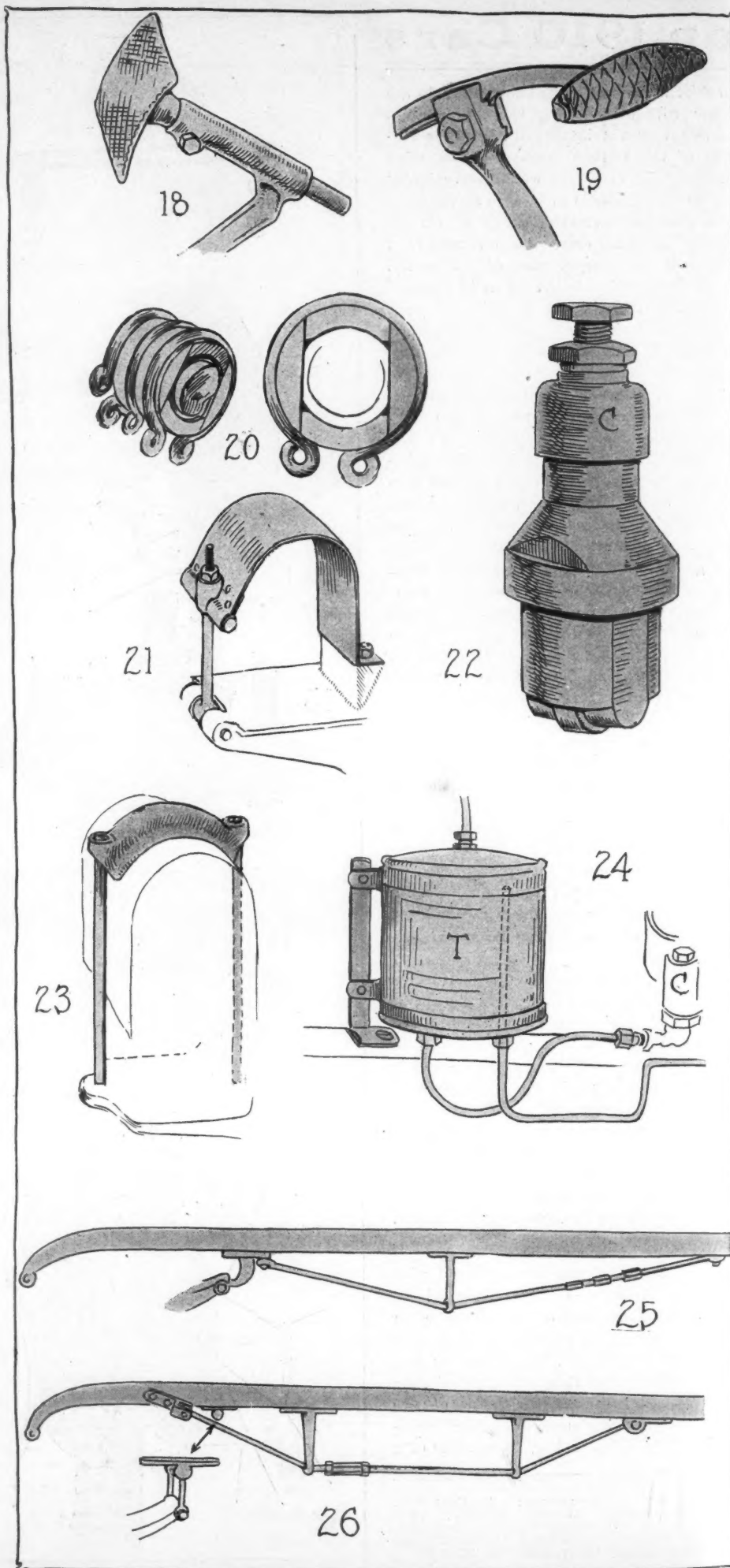
Almost every belt-driven fan is now provided with a means of allowing for the stretch of the belt and maintaining its tension; and it is no longer necessary to bother with belt lacings, for belts now are generally of the endless type. Three types of adjustable fan-brackets are shown in Figs. 15, 16 and 17, of the Matheson, Lozier and Corbin, respectively; the adjustment of the latter being automatically maintained by means of a bell-crank and spring arrangement.

#### Adjustable Types of Pedals

Another fact that the manufacturers are beginning to realize, is that the legs of all motorists are not of the same length, and provisions are now made on several makes of cars whereby the position of the pedals can be adjusted to suit the convenience of the driver, instead of the driver having to adjust himself to the pedals. The adjustable types of pedals to be found on the White and Columbia cars are shown in Figs. 18 and 19, respectively. The Thomas company was perhaps the first advocate of the adjustable pedals, having fitted them to its six-cylinder models of last year.

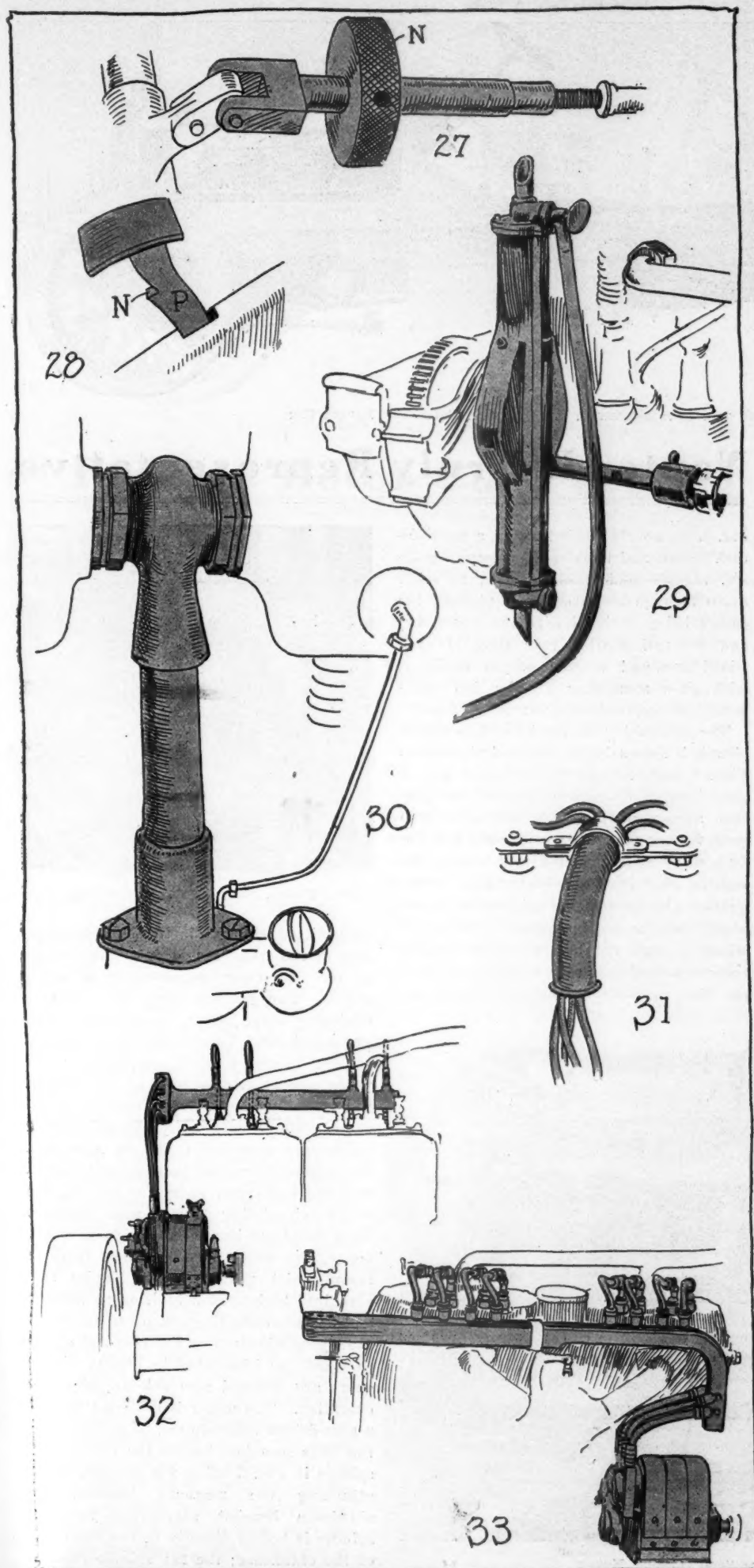
Among the miscellaneous, many interesting features are to be found. Fig. 20 shows a safety joint to be seen on the pumpshaft of the Peerless cars, which protects the shaft from being twisted off in case the pump is frozen, or locked by a broken gear tooth or otherwise. The Marmon models have new adjustable push-rods, Fig. 22, which are provided with a cap C, that not only serves to keep dirt and dust from the bearing surfaces, but it also acts as an air cushion which reduces valve noise to a minimum.

The old method of attaching magnetos by screwing four inaccessible stud-bolts up through the bracket and into the base, has been almost entirely abandoned for the simple band and thumb-nut attachment. Two different methods are shown in Figs. 21 and 22.



ADJUSTABLE PEDALS: 18—WHITE, 19—COLUMBIA, 20—PUMP-SHAFT PROTECTION ON PEERLESS; MAGNETO HOLDERS: 21—WHITE, 23—PREMIER; 22—MARMON VALVE LIFTER; 24—SPEEDWELL AUXILIARY GASOLINE TANK; FRAME SUPPORTS: 25—RAMBLER, 26—MATHESON WITH TWO KING-POSTS





Speedwell cars are fitted with an auxiliary gasoline tank T with about  $\frac{1}{2}$  gallon capacity, situated in front of the carburetor, C, as illustrated in Fig. 24.

However strong and well proportioned the side members of a motor car may be, they are often subjected to an overload, a car designed for five passengers, will often be called upon to carry seven or eight and sometimes more with several of the passengers standing on the running boards so that the greater part of the load falls upon the middle part of the frame. This practice is liable to strain the frame and give it a permanent sag which is not only very unsightly, but much trouble is often encountered from the misalignment which ensues. To provide for these overloads without greatly adding to the weight of their products, the Rambler and Matheson cars are fitted with truss rods as illustrated in Figs. 25 and 26 respectively.

For the simplest and most direct intake manifold the new Marmon certainly is to be commended. The cylinders are cast in pairs, and the intake manifold is connected to the two pairs as illustrated in Fig. 30. Credit also must be given to all manufacturers who have provided simple and accessible brake adjustments; such as is shown in Fig. 27, a feature of the Chadwicks, which is accessible by lifting the front floor-boards, and adjusted by turning the knurled nut N.

#### Tire Pump Desirable Feature

Pierce-Arrow cars always have been distinguished by the completeness of their equipment and on the new models this has been further added to by the adoption of a power-driven air-pump for inflating tires. The power pump is located on the left-hand side of the motor as illustrated in Fig. 29, and is bolted directly to the side member of the frame. It carries on its shaft a large bronze gear, designed to mesh with a small steel pinion splined on the water pumpshaft as illustrated. More attention than ever has been given this year to the arrangement and proper protection of the ignition wiring, the Peerless and Oldsmobile companies having been most careful in this respect. Most makers, however, although not so thorough in regard to the arrangement of their wires, have at least enclosed them in metal of fiber tubes such as is shown in Fig. 31, which protects the insulation of the wires from the heat of the cylinders.

In Fig. 28, a simple means of holding the exhaust cutout open is obtained by the Matheson company by making a notch N on the inner edge of the cutout pedal P, which engages the under edge of the upper horizontal portion of the frame. To disengage the pedal one has but to push it forward when a spring closes the cutout.

FIG. 27—CHADWICK BRAKE ADJUSTMENT; 28—MATHESON CUT-OUT; 29—PIERCE-ARROW TIRE PUMP; 30—MARMON INLET PIPE; 31—WHITE WIRE PROTECTION; 32 AND 33—HIGH TENSION BUSS-BARS ON OLDSMOBILE AND PEERLESS CARS RESPECTIVELY

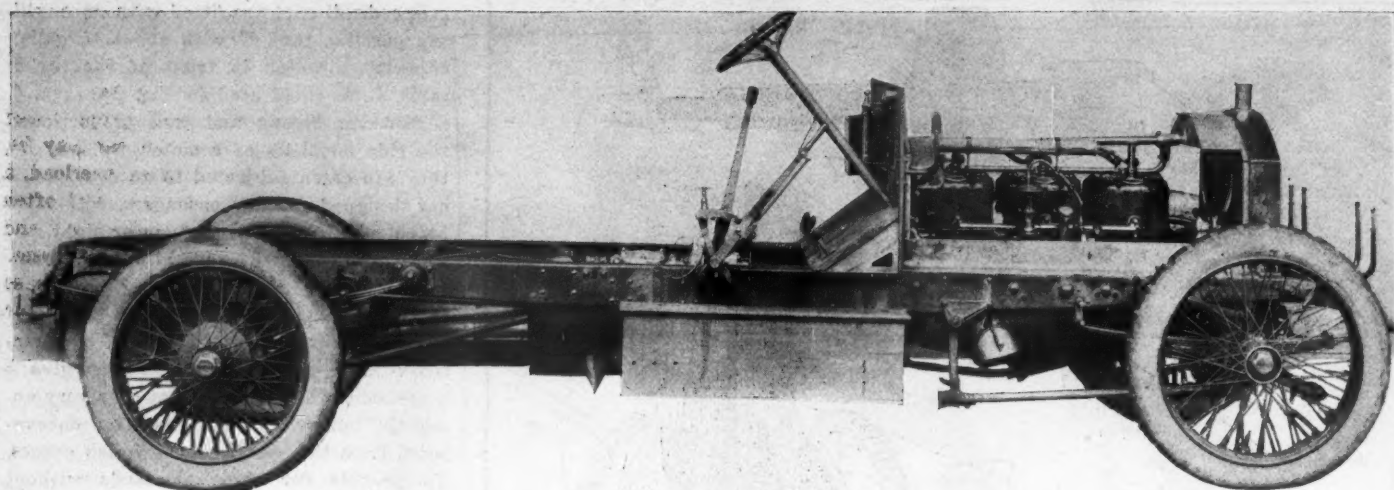


FIG. 1—THE CHASSIS OF THE 45-HORSEPOWER, SIX-CYLINDER NOISELESS NAPIER CAR

AMONG the most prominent of the British-made motor cars there are, perhaps, none more representative of up-to-date European engineering practice than the noiseless Napier cars, manufactured by Napier & Son of Acton, England, and distributed by S. F. Edge, Ltd., London, and the New York agency recently established in this country. Two of the favorite models of these cars are herein described and illustrated.

The 45-horsepower six-cylinder model has an L-type water-cooled motor with a circulating force-feed oiling system, a multiple-disk clutch, a three-speed selective sliding-gear transmission located amidships, a propellershaft with two universal joints, full-floating type of bevel-gear rear axle, long wheelbase and wire wheels of the Rudge-Whitworth type, equipped with tires 880 by 120 millimeters, which is equivalent to 34.64 by 4.72 inches.

Among the characteristic features of the new 15-horsepower model, attention is called: to the unit construction of the power plant, which comprises a four-cylin-

## Napier Is Truly Representative

der, L type water-cooled motor, a multiple-disk clutch and three-speed selective gear-set, thermo syphon circulation; to shaft drive through worm or bevel pinions, the choice being optional with the purchaser; and the full floating rear axle, 114-inch wheel-base and wooden wheels equipped with tires measuring 815 by 105 millimeters, or approximately 32 by 4 inches.

The general lay-out of the 45-horsepower chassis is shown in the side and plan views Figs. 1 and 7, respectively, which give a good idea of its appearance and the general arrangement of its features. The main frames are perfectly straight and the deep section is prolonged well toward the ends to make them extremely rigid. Three-quarter platform spring suspension is employed at the rear, a special feature of which is that the bracket to which the transverse spring is attached projects from the side members so that all strains are

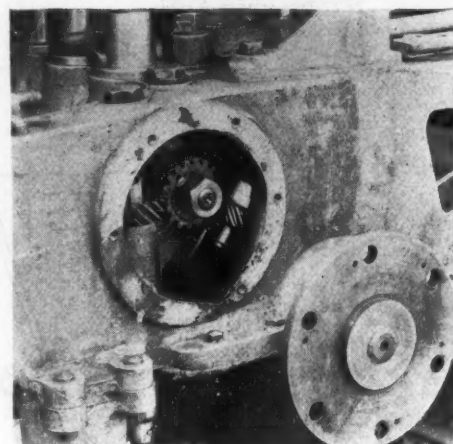


FIG. 2—OIL PUMP AND IGNITION GEARING

transmitted through it to the side members of the frame instead of to the center of the rear cross member as in other makes. The gasoline tank with its conveniently large filler, combined number plate and lamp bracket is clearly shown.

Figs. 3 and 6 show respectively the valve and carburetor side of the engine. The cylinders are cast in pairs with integral waterjackets; both inlet and exhaust valves are operated from one camshaft. All engine gears are thoroughly inclosed, and the half-speed gears for driving the water circulating pump and magneto when fitted are located at the front of the motor, the wheels having helical teeth to insure quiet running. The Napier synchronized high-tension ignition mechanism and the oil-circulating pump are driven by skew gear wheels from the rear end of the camshaft, as illustrated in Fig. 2. These gears are inclosed also and are silent in operation. The motor is designed so that a gear-driven magneto can be easily fitted, the bolts seen just behind the water-pump spindle in Fig. 6 being for the purpose of attaching the magneto bracket. An aluminum bracket supporting the fan spindle is bolted directly to the front end of the crankcase; the fan spindle runs on

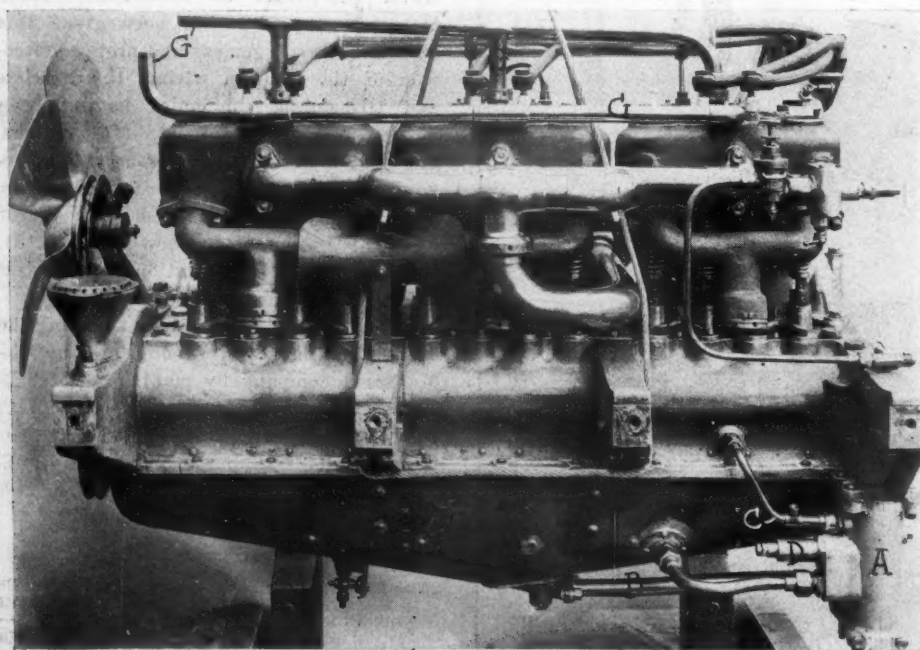


FIG. 3—VALVE SIDE OF NAPIER SIX-CYLINDER MOTOR



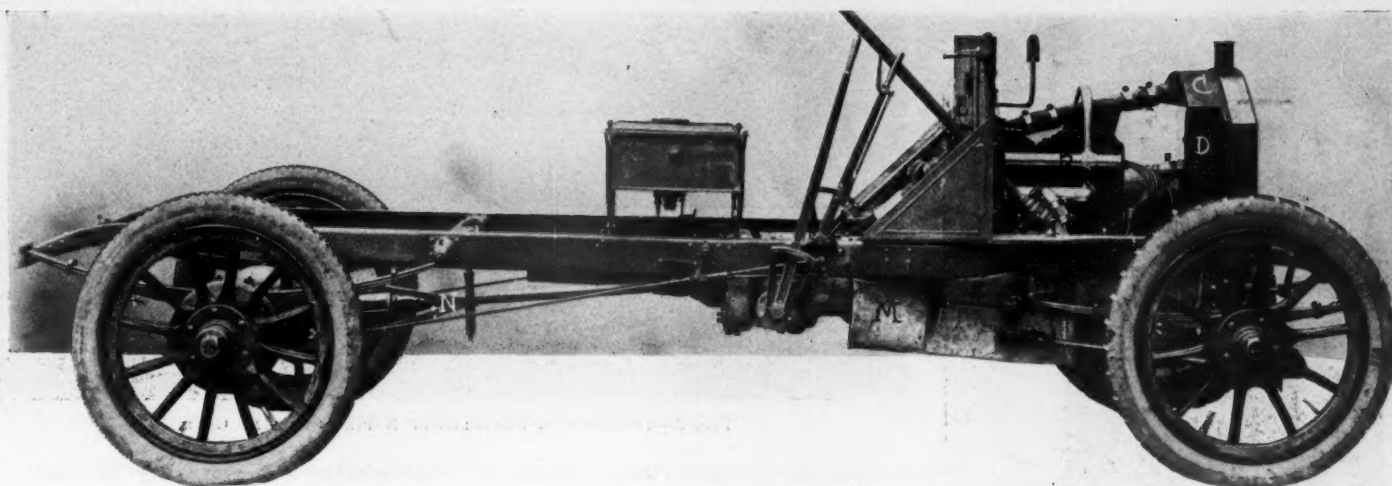


FIG. 4—CHASSIS OF THE 15-HORSEPOWER, FOUR-CYLINDER MODEL ENGLISH NAPIER

## of Foreign Motor Car Practice

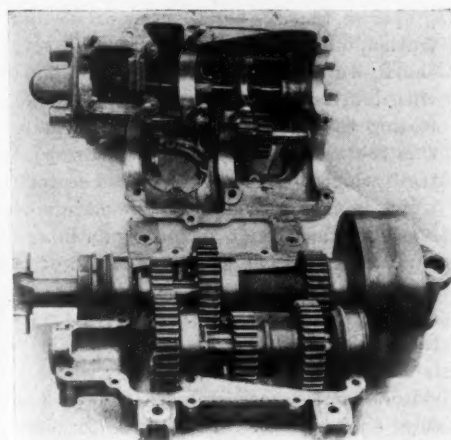


FIG. 5—THE NAPIER GEARSET

a ball bearing, is belt-driven from a pulley on the end of the crankshaft, and the fan itself is a solid aluminum casting. The oil circulating pump is shown at A in Fig. 3. The pipe B conducts the oil from the reservoir of the crankcase to the pump. C is the pipe through which the oil is delivered to the engine. Alongside the pump is a chamber containing a gauze strainer which can be easily removed for cleaning, and through it all the oil passes. A relief valve D is designed to come into operation when more oil is pumped than is required for the lubrication. When the correct pressure of oil is exceeded this valve opens and the excess runs back to the reservoir by the pipe located just below D.

The water inlet pipe to the engine is above the circulating pump F, Fig. 6, and the outlet pipes, which are two in number and marked G, are seen most clearly in Fig. 3. The pump is of the centrifugal type and the water circulation is so arranged that if for any reason the pump should stop running, the circulation still would be maintained on the thermo-syphon principle, providing that the water in the radiator was at a higher level than the outlet from the engine. The carbureter K, which is of the new Napier controllable

type, with its hydraulic air regulator L and gasoline filter, are to be seen in the foreground in Fig. 6. The advantage of the hydraulic air regulator lies in the fuel economy which it promotes. The substantial design in the various smaller details of the engine is worthy of attention. The attachment of the inlet and exhaust pipes is simple, and the arrangement allows for expansion and contraction. The valve push rods are adjustable and their guides are large, and the manner in which each pair is held in position by a double fork is commendable. The large diameter of the water pipes, and the method of their attachment in the center of the large cover plate over each pair of cylinders also is good practice. These plates are removable and give ample access to the cylinder jackets for cleansing them from water incrustations and deposit.

Fig. 8 shows the crankshaft in position.

It is made of chrome nickel steel and is retained in position by caps bolted to the upper portion of the crankcase. The main crankshaft bearings and crankpins are lubricated under pressure. The main oil delivery pipe H with the outlets J to each journal bearing can be seen in this illustration. Holes are drilled in the crankshaft extending from each journal bearing to a crankpin. Those in each of the two center pair of crankpins are visible, and the gearing at the front end of the engine has oil jets directed onto the teeth of the gears. The disk forming one web of each end crank is for the purpose of balancing the reciprocating parts of the engine and helping to secure freedom from vibration.

The Napier synchronized ignition is seen at I in Fig. 6; its aluminum support being bolted to the crankcase of the engine in a substantial manner. The ignition current is obtained from a battery and induction coil in the regular way, and synchronism is accomplished by means of a specially combined interrupter and distributor, both of which are inclosed by dust-proof

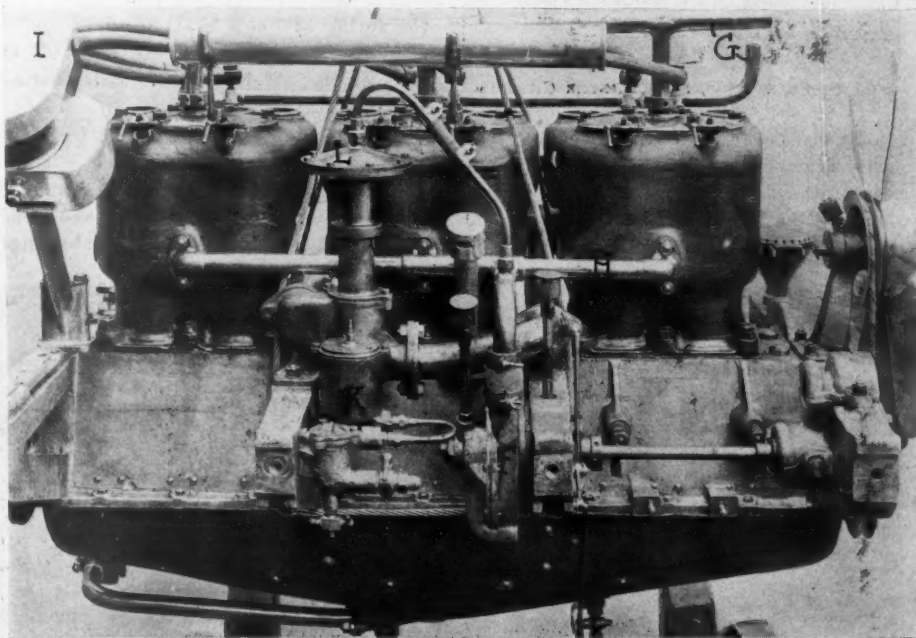


FIG. 6—RIGHT SIDE OF 45-HORSEPOWER, NAPIER MOTOR

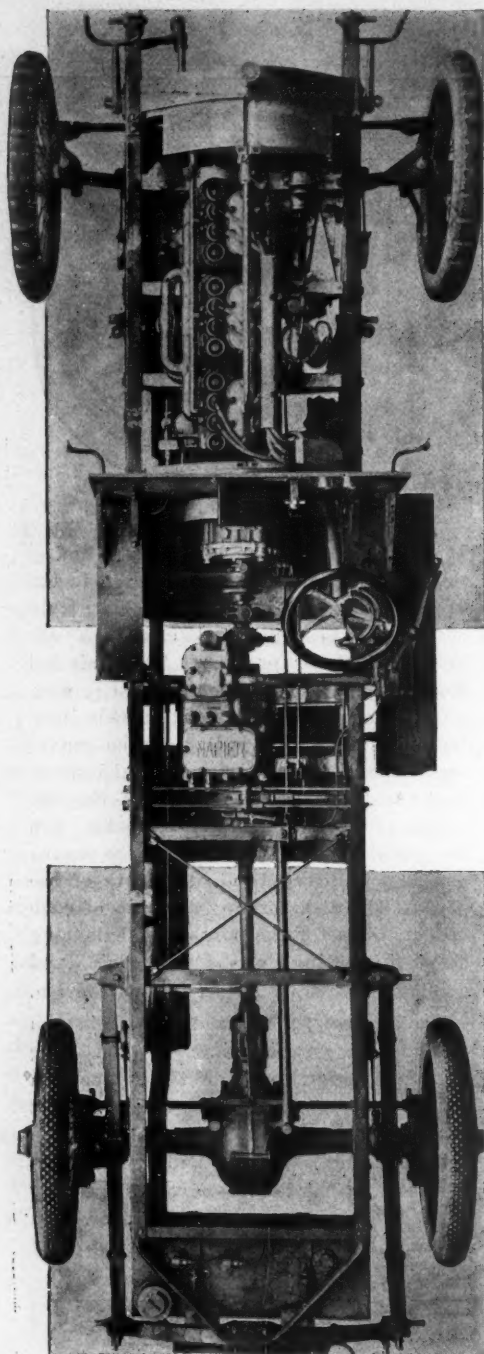


FIG. 7—PLAN VIEW, SIX-CYLINDER CHASSIS

aluminum cover plates, which may be easily removed for inspection. The smallness of the flywheel of the engine is particularly noticeable, it being about 90 pounds lighter in weight than would be

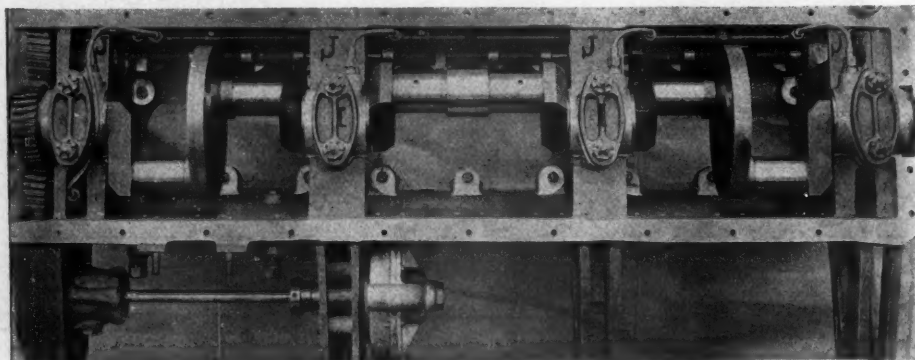


FIG. 8—NAPIER CRANKCASE, LOWER PORTION REMOVED TO SHOW CRANKSHAFT SUPPORT

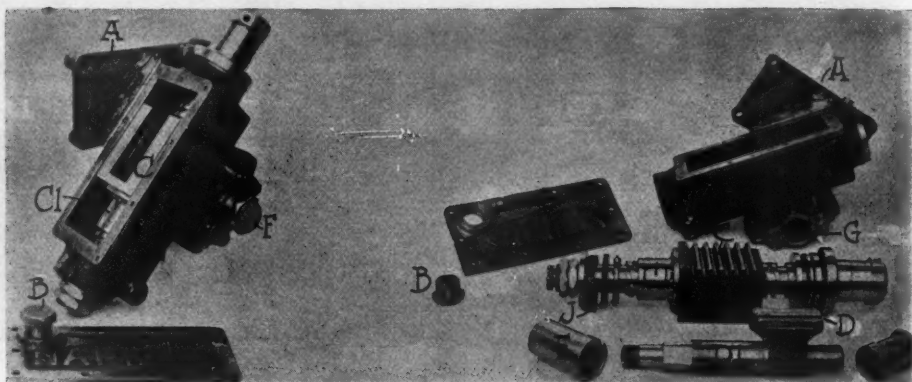


FIG. 9—INTERESTING FEATURES OF NAPIER STEERING GEAR

required for a four-cylinder engine of similar horsepower. The clutch is the Napier multiple-disk type, the outer case being fastened to the flywheel.

In Fig. 5 the gearset assembly is shown with the two halves of the case separated. There are three forward speeds and a reverse with direct drive on the top speed, operated by means of a gate change. The gears are so arranged that when the top or direct drive is running the countershaft is out of mesh and not revolving, and the box is so designed that when a gear is in mesh there always is a bearing immediately next to it supporting it. The gearbox has three inspection covers, so that the interior can be easily examined, and the whole of the change-gear operating mechanism and a reverse wheel are contained in the top.

On the propellorshaft there are two universal joints which are encased in leather and packed in grease. The Napier rear axle, it is claimed, is built strong enough to transmit 120 horsepower. The two internal shafts have the differential wheels forged solid with them, the differential gear is of the parallel type and with six dead hard steel pinions, each bushed with phosphor bronze and mounted on hard steel pins, and the outer ends of the external casing of the rear axle, upon which the spring brackets bear, are prolonged to take the weight of the car from off the ends of the driving shaft. Ball bearings are used throughout.

The steering gear of the six-cylinder Napier, the features of which are shown in Fig. 9, has been given considerable attention by the manufacturers, and every effort has been made to make it absolutely

unbreakable and practically unwearable, with the necessary provisions for adjustment. The steering mechanism as a whole is bolted onto the side member of the frame by means of four bolts through the plate A, Fig. 9. The lid of the steering box may be seen lying below the box proper in the left-hand corner of the illustration. Attention is called to the screw cap B, which is provided for filling the box with lubricant. At the right of this illustration the parts are shown disassembled. C is the main portion of the nut, carrying teeth which mesh with the pinion sector D, which in turn is carried on the main steering box axle D1 and, in fact, is an integral portion of it. The enormous width of the teeth on this pinion will be appreciated by comparing the width with other parts of the steering gear. The main spindle D1 is carried in bushings E and F, whose inside circumferences are eccentric with the outer ones, so as to render the sector pinion adjustable relatively to its position to the rack on the nut C. If the thin side of the bushings are put toward the rack the teeth are thrown further into mesh, and vice versa. The rack C is threaded internally to receive the worm at the end of the steering column, and the part C1 is provided to maintain adjustment between the rack and screw. The shaft containing the screw is mounted on annular ball bearings for taking the thrust, and these bearings are adjusted by means of the double nuts at the end of the shaft.

Many other features and refinements, characteristic of the Napier product, too numerous to mention in this article, are to be found in this mechanism.

The new 15-horsepower Napier, as shown in Figs. 4 and 11, differs greatly from the six-cylinder model just described. The frame is narrowed considerably in front to insure a small turning radius, the flywheel of the motor is located at the front end, while the case containing the clutch and gearset is bolted directly to the rear end of the crankcase. The gasoline tank is located amidship on top of the frame, so as to come directly under the driver's seat. Magneto ignition is a regular feature on this model, the magneto being placed across the front of the engine and driven by inclosed skew gearing. Attention is called to the workmanlike arrangement of



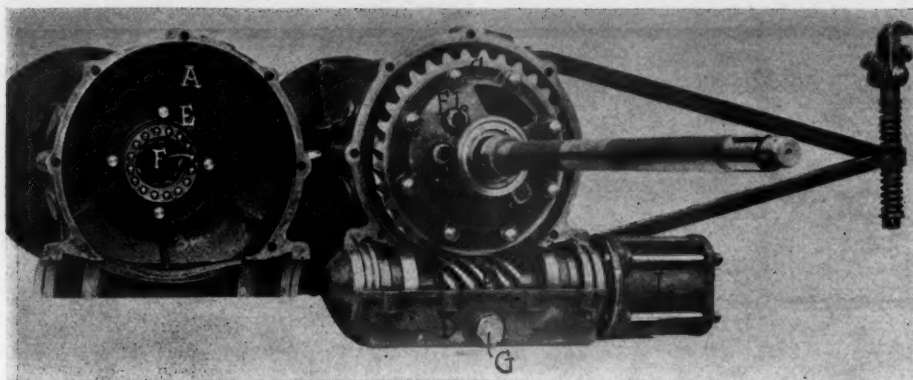


FIG. 10—SHOWING WORM GEARS OF NAPIER REAR AXLE

the aluminum conduits B, Fig. 4, leading the ignition wires from the magneto to the spark plugs. In the thermo-syphon water circulation, adopted this year instead of a pump, the neat arrangement of the water outlet pipe A and the ample size and flexible joints are noticeable. The water capacity is large, as can be seen from the extra reservoir C of the radiator, and cooling is facilitated by means of the fan D that is made of a single piece of steel pressed into shape and which runs on ball bearings, is belt driven and mounted on a substantial aluminum bracket bolted to the crankcase.

Lubrication of this motor is quite similar to that of the model previously described. The crankshaft is mounted in bearings lined with white metal having an internal oilway into which oil is forced by a rotative gear pump, after having first passed through a strainer. From this oilway ducts lead to each journal and piston-rod bearing. The system is simple and effective and provides a positive plan of lubrication, no sight feeds or glasses being necessary, as a glance at the plunger indicator E on the dashboard is sufficient to show the operator that the pump is in operation.

The carburetor on this motor, although entirely automatic in its action, without springs or loose pieces, is under the control of the driver by means of a foot accelerator and the regular lever on the steering wheel. The valves are all on one side and mechanically operated by means of an adjustable push rod from a single camshaft contained within the crankcase. A new design in the multiple-disk clutch is employed, which consists of a number of phosphor bronze and steel disks.

The whole of the clutch is contained in an oil-filled compartment M, Fig. 4, situated between the gearset and the motor. Two particular features of this new clutch are the simple and ingenious device which allows for expansion and contraction of the steel disks as their temperature varies, and an arrangement for automatically braking or retarding the speed of the gearshaft, when declutching, to facilitate gear changing and preserve the teeth of the gears.

Transmission from the gearset to the rear axle is by means of a propellor shaft having two universal joints, both of which are encased in leather and packed in

grease. A notable feature of the rear axle construction is that the lateral sleeves enclosing the driving shafts are not merely pieces of rolled tube, but are made from lengths of steel bar bored to receive the axle shaft and turned on the outside to form a bearing for the spring brackets, which are very wide and provided with a means of lubrication; these brackets also carry the back brake segment supports.

The driving shafts of the rear axle are mounted on ball bearings at the outer and inner ends, while a double row of ball bearings are interposed between the hub of the wheels and the end of the casing, which carries the weight of the car.

A great deal of interest at the present time is being manifested among the motoring public in the worm drive, and this system of transmitting power to the back axle is now used on the small Napier cars. In Fig. 10 a complete rear axle of the 15-horsepower car with the casing A removed from one side to expose the worm B and wheel C, is illustrated. Incidentally it may be pointed out that the row of balls E seen inside the left-hand casing is one of the thrust bearings of the axle, the thrust ring being in position at E1 on the worm wheel C. The roller bearing F, just inside of the ball thrust bearing E, is the bearing on which the inner end of one of the driveshafts revolves. The plug G in the casing D is provided to drain the dirty oil. Fig. 12 shows the worm with its shaft bodily removed from its case, a ball-bearing H and H1 being placed at each end to take the thrust, while the worm, which is solid with its shaft and formed out of a single slab cut from a steel bar, revolves on two roller bearings J, the outer ring K

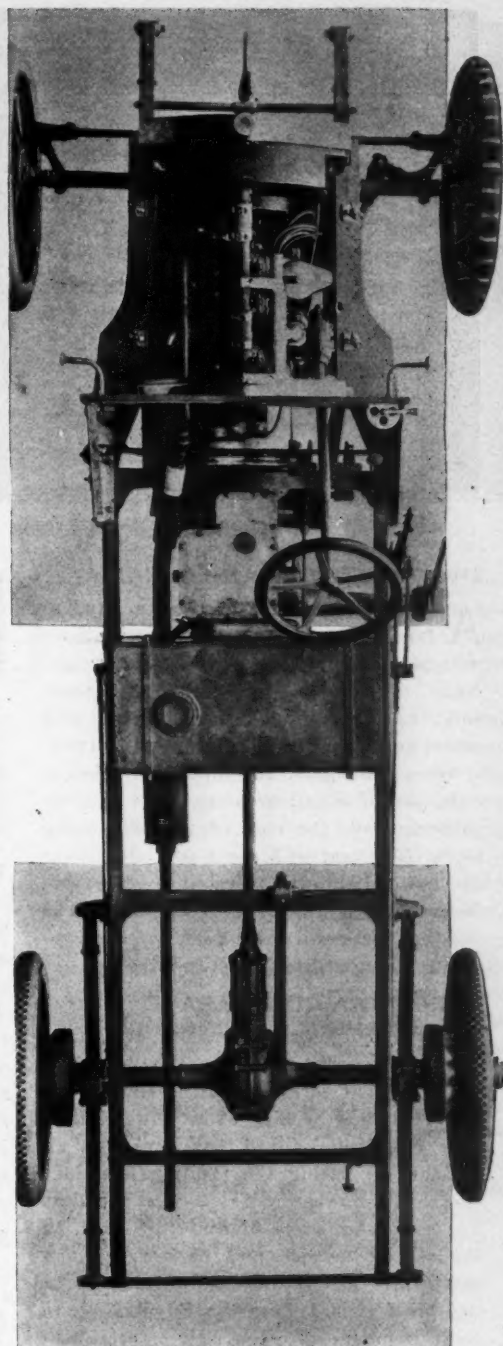


FIG. 11—PLAN VIEW, FOUR-CYLINDER CHASSIS

and K1 of each roller bearing being removed from its position over the roller for the purpose of showing the rolls. The portion marked L is the coupling between the propellorshaft and the worm gear.

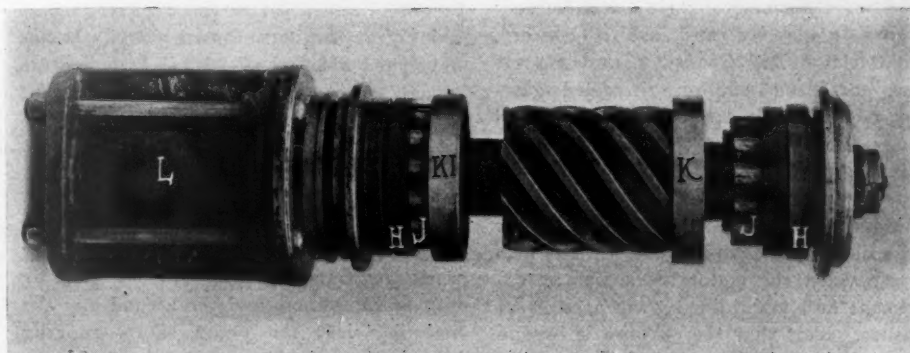
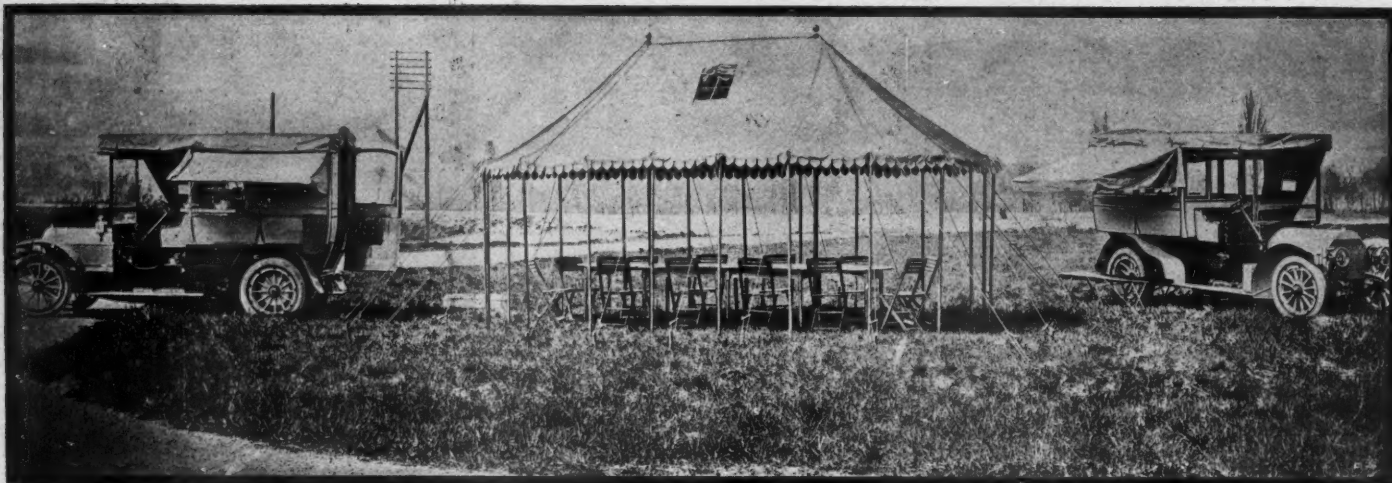


FIG. 12—SHOWING THE DETAILS OF THE DRIVING WORM ON SMALL NAPIER CARS



TRAVELING MOTOR KITCHEN USED BY KAISER WILHELM AT THE MILITARY MANOEUVERS IN GERMANY

### SHOWS INTERURBAN ECONOMY

A VERY satisfactory test of a Lambert friction-driven interurban car, equipped with a 60-horsepower gasoline motor was made between Anderson and Lebanon, Ind., recently, the distance being 65.2 miles and the running time, with twenty-four passengers, 139 minutes. The car consumed 15.6 gallons of gasoline and one gallon of oil, the cost of the trip being \$3.74. The cost—4.5 cents per mile—was divided as follows: Gasoline, \$1.56; oil, 16 cents, and wages of crew, \$2.02. The trip was made over the tracks of the Central Indiana railroad, a steam road.

### PLANNING A CITY GARAGE

Service Director Sundmaker, of Cincinnati, is preparing to open a city garage at the old Hunt street pumping station for the repair and housing of city-owned cars. City Solicitor Ballard has prepared an ordinance creating the position of motor car repair mechanic, to pay \$4 per day. The city now owns fifteen cars, used by the safety, service and park repair department. The repair bills of the city in the past caused Director Sundmaker to make inquiries with the view of establishing a city garage, which project now seems certain of being secured.

### ST. LOUIS TAKES TO TRUCKS

The motor truck and the motor delivery wagon are appearing in St. Louis for the first time in earnest. Recently the Hanna & Kinsella Coffee Co. placed on the streets six new electric 2-ton delivery wagons made by an eastern concern. The Carleton Dry Goods Co. at the same time purchased a 3-ton air-cooled gasoline motor truck. Several other retail houses are considering the using of motor delivery wagons soon. Until recently the Anheuser-Busch Brewing Co. was the only business house in St. Louis using motor deliveries. This company placed them into service when the motor truck was an experiment and maintained them at a great expense. Now that the expense is becoming minimized, it is predicted that within a short time motor delivery wagons, for

## In the Realm of the

heavy deliveries, will be no unusual sight in St. Louis, which is slow to adopt anything new, but when it does awake to the necessity of progress, it usually acts with credit to its enterprise.

### TRY IT IN NASHVILLE

Nashville's postmaster has been trying the experiment of collecting mail from the suburbs by motor car and has found that not only can more collections be made daily, but that a later round can be made in time to get all matter off on the early night trains, an impossibility under the regular mail wagon arrangement. He has recommended to the department at Washington that arrangements be made for a regular motor collection service, and it probably will be done.

### MILWAUKEE SATISFIED

The first evidence of the economy of motor vehicles in the fire patrol service at Milwaukee, Wis., is the abolition of station No. 3, which is made possible by the fact that the new motor truck is capable of covering three times as much territory as horse-drawn patrols. Station No. 3 is on the extreme south side, and the entire company will be dropped and the house abandoned. The motor patrol, stationed in the center of the city, has proven its ability to get to any point in No. 3's territory as quickly as the horse-drawn patrol. It has developed a speed of 36 miles an hour in actual service, whereas tests brought out only 25 miles an hour.

### TEST FOR FRANKLIN TRUCK

In the 2-day reliability run around New Jersey a Franklin truck was utilized as a baggage carrier. The run of the first day was from Jersey City to Atlantic City, by way of Lakewood, and the second day the motorists left the ocean shore, running inland through Hammonton and Jersey City to Trenton over a route which proved

rough for most of the motor cars. Frequent depressions in the roadway, into which the cars pitched with heavy jolts, caused many tire blow-outs and as severe an accident as a broken axle. Rain made the roads heavy and added to the difficulties of touring. Although not entered officially the truck was the second to check in at the noon control at Lakewood and was well up among the leaders at the finish for the day in Atlantic City. On the return journey it was among the first to check in at Jersey City. During the 2 days it maintained touring car speed without injuring any of the luggage which it carried. At times it was going at a speed which nearly equaled the legal limit for the state of New Jersey. The engine of the truck was 18 horsepower. The carrying capacity was 2,000 pounds. The truck was shod with pneumatic tires.

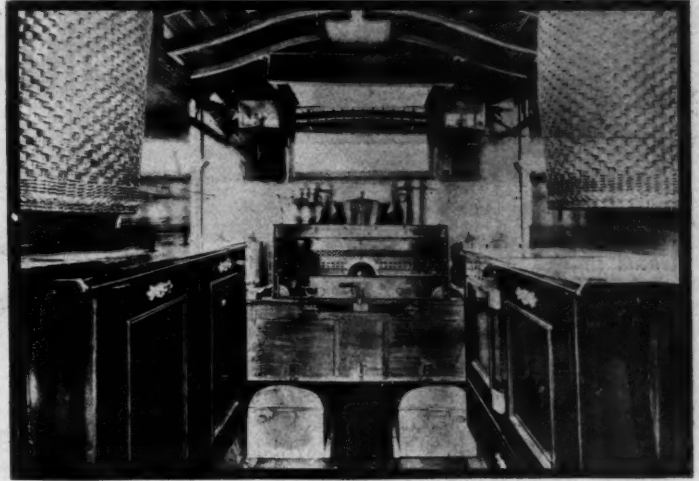
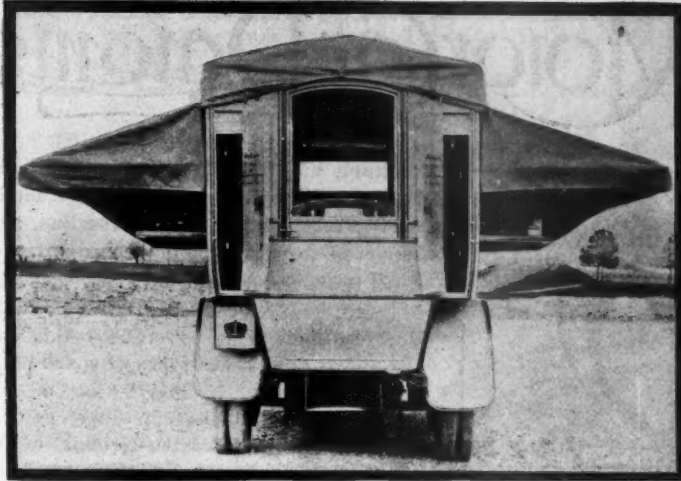
### OMAHA FAVORS MOTOR FLEET

Omaha has made an effective beginning of a campaign to place the entire fire department on a motor footing by authorizing the purchase of two combination motor chemical and hose wagons and a squad car for the chief, which will carry five men. The combination cars weigh 10,000 pounds, have solid tires and cost \$5,000 each. They will be 60 to 90 horsepower and will run from 30 to 35 miles an hour. A feature will be the big searchlights which will throw a flood of light into the dark recesses of buildings which firemen may penetrate. The Omaha fire and police board has declared itself in favor of replacing the old-style apparatus as fast as possible with apparatus of the motor type.

### FARMERS BUYING MOTOR TRUCKS

The use of motor cars may solve the present milk war raging in Massachusetts between the Boston contractors and the farmers, especially those of Worcester county, from where over two-thirds of





VIEWS OF MERCEDES CAR USED BY EMPEROR WILLIAM FOR TRAVELING KITCHEN

## Commercial Car

Boston's milk is shipped daily. At the present time a movement is on foot by Clinton, Berlin and farmers on the outskirts of Worcester to raise enough funds to purchase two large fast motor trucks to run into Boston every night with their fresh milk.

### INDIANAPOLIS WANTS TAXIS

An effort is being made to organize another company to establish a taxicab service in Indianapolis. Francis J. Wallace, of Buffalo, N. Y., and W. G. Young, of Atlanta, Ga., have been trying to interest local capital in the project, the plan being to organize a \$100,000 concern and place forty taxicabs in service. Prices charged will be 50 cents for the first mile, 10 cents for each additional  $\frac{1}{4}$  mile and 10 cents additional for 6 minutes of waiting.

### AFTER MUNICIPAL GARAGE

Mayor Fitzgerald, of Boston, has called a conference of the city chauffeurs to talk over the plan of erecting a municipal garage for the city motor cars. He states that there are so many cars now owned by the city that if they were housed in one building it would be more economical. He plans to have the garage erected in one of the paving yards.

### SPOKANE ABOLISHES STANDS

Motor car stands have been abolished in Spokane, Wash., by order of the city council and transportation companies have been notified to have their vehicles off the street enumerated in the anti-congestion order.

### USING THREE TRUCKS

The Hartford Electric Light Co. of Hartford, Conn., has placed an order for two 1-ton electric trucks and one 1,000-pound vehicle, all electrically-propelled. The Hartford Electric Light Co. was one of the first large enterprises in this city to make use of commercial cars and after

a careful test of all classes of vehicles has concluded that the electric commercial car is the most economical for its particular class of work. Each car will be capable of 40 miles on one battery charge and as the company is well equipped with a garage and repair shop it will be a simple matter to keep the cars in excellent condition.

### PROVES ITS VALUE

The value of a motor police ambulance was especially demonstrated twice by the Cincinnati police during the past week when a run of 10 miles was made in 27 minutes, including the caring for an injured man. Two minutes after the machine delivered its first burden it departed on a second emergency call on a run of 16 miles, which was completed in 61 minutes, which included a delay at the county morgue. These records are thought remarkable by Police Chief Milliken and fully demonstrative of the value of the motor vehicle for emergency work by police departments.

### MOTOR TRUCKS IN PORTLAND

Motor trucks are now firmly established in Portland, Ore., and, according to the present outlook, all the department stores, contracting, construction and delivery companies, within a year will be using them in place of horses. One of the most extensive users in Portland is the C. J. Cook Contracting Co. One of the trucks owned by this company has for the past several weeks been in use hauling crushed rock along Belmont street, working day and night and carrying 7,000 pounds to the load. Mr. Cook will immediately put into use four more trucks of 3-ton capacity each, to accommodate his growing business.

Both Lipman, Wolfe & Co., Olds, Wortman & King and Meier & Frank, three of the largest dry-goods houses of Portland,

have been using motor trucks for some time past and it is their intention to add a number more during the present year, and will probably replace all their horse-drawn vehicles with motors.

The Buick Automobile Co., of Portland, is doing an extensive commercial business, and recently ordered machines for the C. T. Townsend Creamery Co., the Honeyman Hardware Co., Olds, Wortman & King and the Portland Auto and Delivery Co. The White Automobile Co. has ten motor wagons en route for its newly organized delivery. Frank C. Riggs, of the Riggs Auto Co., has announced that he will take up the commercial end of the business extensively and has a 3-ton truck on the way to Portland. The Thompson Motor Car Co., a new Portland concern, will handle Plymouth trucks and has ordered another carload. The Crowe Automobile Co. has put in a heavy line of Oakland trucks, while the Western Automobile Co. acts as agent for the Knox. The Studebaker company reports a big demand for 1,500-pound delivery wagons.

### WANTS A MOTOR SERVICE

Superior, Wis., the big port at the head of the great lakes and twin sister of Duluth, Minn., will be the first city in northern Wisconsin to use motor police apparatus. Sealed proposals will be received until 8 p. m., June 6, by Chief of Police V. McKinnon, for furnishing one covered, motor-propelled police patrol wagon, bids to be accompanied by cuts and complete set of specifications and give guaranteed delivery date.

The city of Racine, Wis., home of several big motor car factories, is contemplating the purchase of police and fire apparatus. The proposition is to install a motor police patrol and ambulance, and a motor hook and ladder truck. A new ladder truck must be purchased within a short time and several new teams of horses must be obtained soon, so the promoters of the motor idea believe it will be expedient and a saving to purchase a motor truck at once.



# Current Motor Car Patents

**New Multiple Jet Carbureter**—No. 958,476, dated May 17; to George E. Cook, New York, N. Y.—This patent is illustrated in Fig. 4 and covers a carbureter having an auxiliary spraying nozzle as well as an auxiliary air valve. When the carbureter is in operation gasoline is admitted to the core C at the point G, at slow speeds air admitted at the opening A automatically controlled by the valve V and mechanically controlled by the cylinder valve R, passes across the spray nozzle N and up into the intake pipe M which leads to the motor. As the cylinder or throttle valve R is opened still further communication is also made between the inlet pipe N and the auxiliary spraying nozzle N1, which has both a fixed air inlet A1 and an auxiliary air inlet A2 which is controlled by an automatically operated piston valve P. Both the automatically operated valves V and P are operated by means of the vacuum produced in the mixing chambers B and B1 respectively, and adjustably spring controlled; and either of the spraying nozzles N or N1 may be adjusted individually by means of screws S and S1.

**Another Floatless Carbureter**—No. 958,128, dated May 17; to Albert Howarth, Providence, R. I.—This is rather an unusual carbureter design, in that it is quite simple in design, very small and compact, and has no float-feed mechanism. In operation when a vacuum is produced in the mixing chamber C, Fig. 5, by suction in the intake pipe of the motor, which is connected to the opening I, the cylindrical valve V is drawn upward. As the valve V raises above the edge E of the air inlet tube, communication is made between the mixing chamber and the air inlet tube T by means of lateral apertures L therein, and currents of air are admitted at the lower end F of the air inlet tube. The upper end of the valve shaft S whose lower end slides

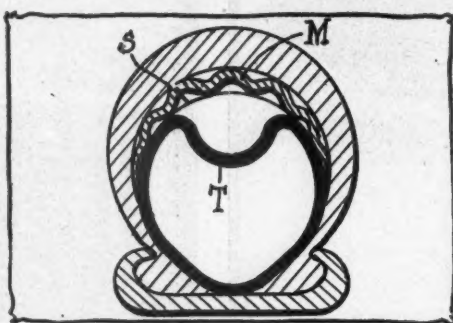


FIG. 1—PUNCTURE-PROOF INNER TUBE

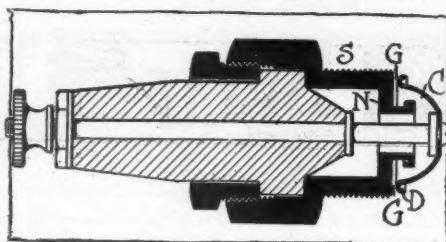


FIG. 2—OIL-PROOF SPARK-PLUG

in the guide G is in constant contact with the ball valve B in the discharging nozzle of the gasoline supply pipe N, and is adapted to unseat the ball valve in the nozzle whenever the slidable valve moves up in the air inlet tube; thus a supply of gasoline is allowed to drip down into the ascending air currents to form a gaseous mixture. A rocking lever indicated by the dotted lines R, serves to limit the rise of the slidable valve V, and being arranged for mechanical control by the operator, acts as a throttle.

**Puncture-Proof Inner Tube**—No. 956,884, dated May 3; to John H. Brown, West Hoboken, N. J.—This patent relates to an inner tube for pneumatic tires, which, as indicated in Fig. 1, has a non-yielding strip S of material attached to it which bears against the interior tread portion of the casing, and means M, for holding the

inflatable tube T away from the thread portion of the casing so that it could not be readily reached by a nail or the like, that happened to pierce the outer casing.

**Oil-Proof Spark Plug**—No. 957,651, date May 10; to Eli J. Bushey, New York, N. Y.—The spark plug covered by this patent differs from other types of spark plugs in that the shell S, Fig. 2, has a neck N extending into the cup-shaped cap C, connected to the insulated terminal of the plug. The spark is designed to jump across the gap G between the upper edge of the cap C and the shell S. The deflected flange D on the edge of the cap C is designed to prevent oil from entering the gap between the electrodes.

**A Novel Two-Cycle Engine**—No. 958,211, dated May 17; to Jacob A. Baab, New York, N. Y.—The engine covered by this patent differs from the ordinary type of two-cycle engine in that it contains a special charging chamber which eliminates the use of the crank chamber for this purpose; and it has a very interesting and original method of attaching the upper end of the connecting rod to the piston whereby the piston is free to rotate. As illustrated in Fig. 3, as the piston P ascends a charge of gas is drawn into the annular chamber C through the inlet pipe I. When the piston descends, this charge is compressed between the inner walls of the piston and the shell S until the port A is uncovered, when the charge passes through the conduit D into the explosion cylinder E above the piston. Here it is again compressed as the piston rises until it passes over the top center, and ignition takes place at the plug G, when the piston is forced down by the explosion of the gases till it uncovers the exhaust port X, lets out the burned gases and the cycle is repeated. The piston P is rendered rotatable by means of the ball and socket joint B.

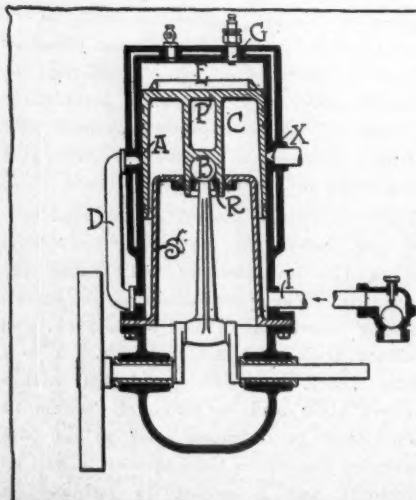


FIG. 3—NOVEL TWO-CYCLE ENGINE

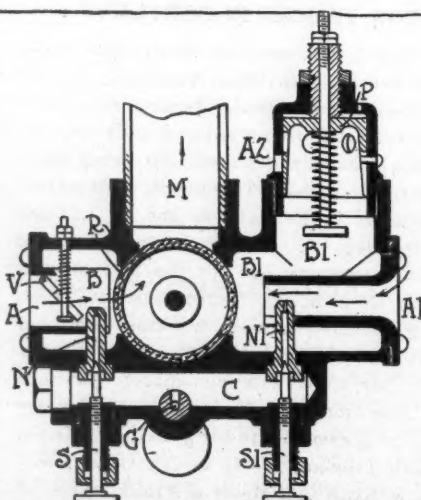


FIG. 4—MULTIPLE JET CARBURETER

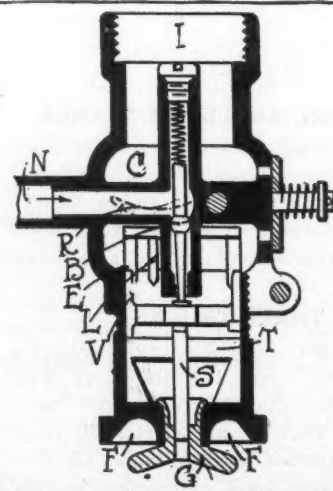


FIG. 5—ANOTHER FLOATLESS CARBURETER





# The Motor Car Repair Shop

## Hints for the Amateur

IT IS rather a common occurrence on a crowded thoroughfare to see a motor car passing down the street with one of its rear wheels wobbling badly. Others also are seen occasionally with a wobbly front wheel. It is more often, however, that the rear wheels run untrue, and in Fig. 1, one way in which this is brought about is illustrated. An effort had been made by an owner of a small Maxwell car to remove a rear wheel as shown at 2A. He placed a jack J, under the axle just below the rear spring and raised the wheel from the ground G. Then, in order to remove the pin P, more clearly shown in sketch 4A, he took up a hammer H and drift D, and in the way indicated tried to drive out the pin. After considerable pounding with a comparatively heavy hammer, the pin was driven out. During this operation the innocent owner was unaware that at every stroke of the hammer he was bending his axle, so that when the pin was entirely removed its axis was indicated by the line B instead of the straight line A. This of course is slightly exaggerated to make the drawing more clear, but the wobbling of the wheel when the car was again put in commission, was like unto the movements of a Salome dancer, as indicated by the dotted lines at 1A. Now, if this owner had allowed the wheel to rest upon the ground, as at G in sketch 3A, this injury to the axle would not have occurred; and if the job had been done by a mechanic he would have placed the jack under the hub of the wheel, as at J in sketch 4A, and not under the threads T as is often done by the amateur. The pin P could then have been driven out with the drift D in the regular way, and all the pounding necessary would not have injured the axle in any way. The owner's reason for wanting to remove this wheel was to replace the key K and the pin P, both having become worn and loosened up. The reason, perhaps, why so much pounding was necessary, in order to remove the pin P which was already quite loose, was that little grooves R in sketch 5A had been worn in the pin, and if a little care had been used in starting to drive out the pin, that is, if it had been given a few light taps so that the ridges on the pin were clear of the edge of the hub, much trouble and damage might have been avoided.

### Sunshine Bad for Cars

When a car is to be left standing in the street for a few hours an effort should be made to pick the shady side, if there be a shady side, and if there is no shade the car should not be left standing in the sunshine. One warm Sunday a couple of weeks ago a proud owner of a brand new car left the vehicle standing in the street for per-

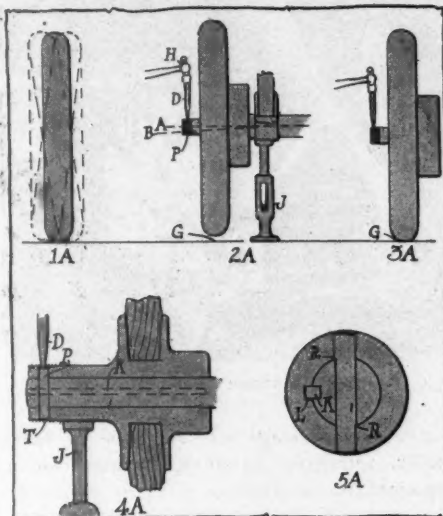


FIG. 1—WHY WHEELS WOBBLE

haps 3 hours in the beautiful warm sunshine, and when he returned to his car shortly after the noonday meal, he was chagrined to note that one of the beautifully painted and polished sides of the body was badly blistered. And there was just cause for his depression, for one could hardly be expected to be hilarious when confronted with damage of this sort, the repair of which will cost anywhere from \$10 to \$50, and which might very easily have been prevented by keeping the car in the garage or, at least, in a shady place until it was ready for use. Hot sunshine also is bad for the tires, for it not only causes chemical deterioration, but it is possible that the expansion of the compressed air may cause a blowout.

### Testing the Magneto

Until the last year or 2 it has been customary on the part of most magneto manu-

facturers to keep the mechanical features of their apparatus a secret, believing that the less an operator knew about the mechanism the less liable he would be to attempt its repair and adjustment, and thus many errors and damage to the machine would be avoided. Time has proven, however, that this theory is incorrect, and instead of leaving the apparatus alone or sending it back to the manufacturer, as soon as it was suspected of needing adjustment or repair, like the small boy with his first watch, the repairman or operator has apparently been seized with a desire to at least see what made the wheels go round, and with generally the same disastrous results obtained. The repairman realizes that he is supposed to know how to make minor repairs and adjustments on a magneto, and the sooner he learns to make these, the better off he is. It is gratifying to note that the more prominent manufacturers of magnetos are changing their policy in this respect, and that they are now issuing instruction books containing excellent descriptions and illustrations relative to the construction of their mechanisms, and that every effort is being made to promote the education of the owner and repairman in their care and adjustment. One of the most complete books of this kind is that issued by the K-W Ignition Co. The Bosch company is also a leader in this respect, and what is more: with every magneto sold by this company, a little wrench, such as shown at the bottom of Fig. 2, is furnished. The closed end E is for loosening the stud which holds a part of the revolving segment of the circuit breaker in place, so that this part may be readily removed if necessary. The open end O is adapted for the adjustment of the platinum points of the circuit breaker, and the blade B which is pivoted on the wrench is the gauge provided to show the repairman how much space there should be between the platinum points at their maximum point of separation. Another little feature of this wrench, which is not universally understood, is the hole H in the center and the little wire spring S. This is for the purpose of testing the type of magneto used on one or two-cylinder motor car or motor cycle engines, and is used as shown in the upper section of Fig. 2. The wrench W is slipped over the high-tension terminal T, as illustrated, and turned so that there is a gap of about  $\frac{1}{8}$  inch between one end of the wrench and the magnets; then, if on turning the motor over by hand with fair rapidity, or running on the other cylinder, if a spark is seen to jump across this gap G, one is assured that the fault is not in the magneto but either in the wiring, the plug, or other feature.

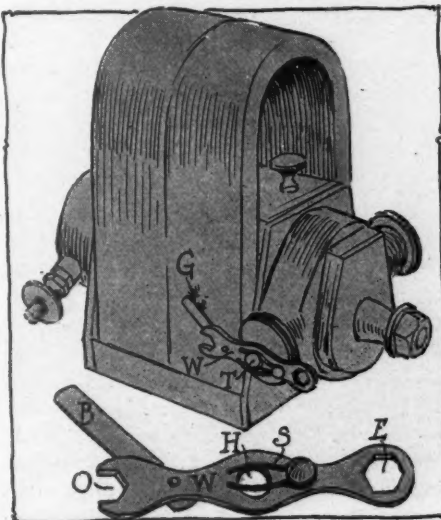


FIG. 2—USE OF BOSCH WRENCH

# From the Four Winds

**PARADE for Louisville**—If the plans of members of the Louisville Automobile Club are carried out Louisville will have a floral parade on July 4.

**Will Race at Fort Erie**—A meet will be held at the Fort Erie, Ont., racetrack, just across the river from Buffalo, on Friday and Saturday, June 10, and under the joint auspices of the racetrack management and Buffalo interests.

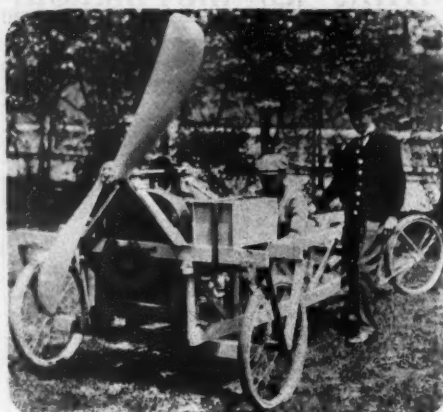
**After Tag Delinquents**—On account of ignoring the regulations as to registering their cars, 400 motorists of Portland, Ore., are in danger of being put in jail, according to a statement made by City Auditor Barbour. The delinquents will be turned over to the chief of police.

**Cars for Orphans Only**—Arrangements are being made for the annual orphans' day under the auspices of the Columbus Automobile Club, early in June. A committee will be appointed to make the necessary arrangements to give the orphans of the Buckeye capital a much needed outing in one of the local parks.

**Organizes at Warsaw**—The Warsaw Automobile Club, of Warsaw, N. Y., has just been organized with the following officers: President, Dr. Z. G. Treusdell; vice-president, C. H. Montgomery; secretary, Garrett Moody; treasurer, J. F. Crawford; governors, L. A. Cass, C. O. Gallett, E. T. Montgomery, George Long, George W. Glazier, S. B. Whitlock. The membership dues were fixed at \$3, which provides for the expense of affiliating with the New York state association.

**Canadian Touring Tip**—The Ontario, Canada, motor vehicle license, issued by the police department at the port of entry, no longer exists. It is now necessary to apply to the provincial secretary at Toronto for the license. The Automobile Club of Buffalo, where application blanks may be had, is making an effort to arrange with the provincial secretary so that members of the club may get their licenses and markers from the customs officials at the point of entry into Canada.

**Sells Pathfinding Privilege**—After 2 weeks of lively competition among the dealers of Kansas City, the honor of supplying the pathfinding car for the Star tour was awarded the Nolan-Rieke Motor Co., agent of the Stevens-Duryea. It cost \$500 to get the franchise. The Lexington will be the pilot car, the Brooke Automobile Co. bidding \$200. The pathfinder starts June 6 over a route that follows the memorable old Santa Fe trail to Santa Fe, N. M., thence northward through Pueblo, Colorado Springs and Denver and east through Hays City, Salina and Abilene to Kansas



THE RAMBLER WIND WAGON

City. The mileage will be close to 2,200 miles, requiring 13 days, inclusive of a Sunday stop in Denver.

**Beloit Plans a Run**—The Beloit Automobile Club, of Beloit, Wis., plans to hold its first annual sociability tour of 2 days soon. It is planned to run to Janesville, Jefferson, Watertown, Waupun, Waukesha and Milwaukee on the first day, returning via Racine, Kenosha, Geneva, Delavan and Janesville on the second day.

**Cadillac a Prize-Winner**—One of the chief features of the Elk Street business men's carnival held in Buffalo during the past week was the motor car parade. The prize for decorations was won by Charles Schoenhut, who drove a 20-horsepower Cadillac touring car, which was massively decorated with spring flowers and greatly outshone in beauty all its competitors.

**Refused to Lock Up Cars**—The proposed reliability run from Columbus, O., to Indianapolis to attend the races on the motor speedway was abandoned by the Columbus Automobile Club because of the condition that all the cars would have to be locked up at Indianapolis during the races. Columbus drivers wanted the use of their cars while at Indianapolis, and for that reason the contest feature was abandoned. But as a substitute a number of cars left Columbus Friday morning, May 27, for Indianapolis, making the round trip easily.

**Badgers Elect**—The Southwest Wisconsin Automobile Association has effected a permanent organization, and officers have been elected as follows: President, George B. Clementson, Lancaster, Wis.; vice-president, Dr. J. Cunningham, Platteville, Wis.; secretary and treasurer, O. A. Eastman, Platteville; directors, W. B. Baillie, Lancaster; D. T. Parker, Fennimore; A. R. Manley, Montfort; R. N. Hoskins, Bloomington; W. T. Hurd, Boscobel; J. T. Carpenter, Rewey; C. C. Londdyke, Cuba City; N. H. Snow, Mineral Point; Frank Condon,

Jr., Darlington, and G. F. Meyer, Platteville. The club will be one of the strongest in Wisconsin and will affiliate with the Wisconsin State A. A., thus gaining representation in the A. A. A.

**Terre Haute Roadability**—The annual roadability run of the Terre Haute Motor Club, of Terre Haute, Ind., was held May 24, from Terre Haute to Indianapolis and return, a distance of about 145 miles. There were nineteen contestants, and the prize was a silver trophy donated by the Terre Haute Tribune. The driver finishing the run closest to a secret schedule was awarded the trophy, and the schedule was well within the state speed limits.

**Callan Explains**—Assemblyman Callan, whose motor car bill last week passed the assembly at Albany, N. Y., and has been signed by Governor Hughes, has given out the following interview: "It was necessary during the last days to correct an erroneous impression which, it seems, had gone broadcast, to the effect that speed traps would not be abolished under the new bill. It was said that cities and villages would be given the right to make their own speed limits, and that it would be possible for a town to make the limit as low as 5 miles an hour. That is not so. True, villages will have the right to fix their own speed limits, but at not less than 15 miles an hour."

**New Club at Nashville**—Nashville, Tenn., at last has a full-fledged club, after several ineffectual attempts in years past to organize one. The fact that the Glidden tour is to pass through Nashville brought about the formation of the club. H. F. Smith was elected president of the Nashville Automobile Club, as it is officially designated, and A. S. Warren was elected secretary until a permanent salaried secretary is chosen later. The directorate is composed of J. O. Cheek, chairman, Leland Hume, J. H. Baird, Robert Rhea, James Palmer, Dr. Olin West, Will Kirkland, John W. Love, W. R. Cole, and M. S. Lebeck. It was decided to have a permanent secretary to devote his entire time and attention to club matters. In addition a man will, of course, also be placed in charge of the club house it is intended to establish. Pending the buying or building of a road house or club the Cumberland Park Driving Club has tendered the use of its buildings and grounds. The officers of the club were instructed to communicate with other clubs in the state to form a state association, so that all could join the American Automobile Association. With organization out of the way, the remainder of the evening was devoted to a long discussion of the Glidden tour. The president was authorized to ap-



point committees on reception, on entertainment, on sightseeing, on meeting the tourists out from Nashville and such other committees as are necessary.

**Portland Club Growing**—Seventy-five new members have been added to the Portland Automobile Club of Portland, Ore., since the new officers started to work. The slogan is "1,000 in 1910."

**Going to Rye Beach**—Plans are under way to have a number of the Bay State A. A. members resume their annual outings to Rye Beach, N. H., where they formerly went early in the summer each year and indulged in various sports. The date planned is June 17, a holiday in Massachusetts, which comes this year on Friday, allowing a run of at least 3 days.

**Rambler Wind Wagon**—A wind wagon, designed for use in testing and perfecting the Huthings aeroplane propeller, is now seen every day on the streets of Louisville, Ky. The machine consists of a wooden frame supported by wire wheels, and the driving mechanism is made up of parts of the Rambler, including the engine, radiator and the transmission. The machine has a speed of about 25 miles per hour.

**Beach Meet Out West**—A meet is scheduled for July 11 at Cohasset beach, near Aberdeen, Wash. This will be the first event of the kind ever held on this famous beach. The great wide beach of smooth white sand stretches away for 20 miles. There are no grades and no curves. Even the 50-mile event will necessitate but two turns. The beach at low tide is several hundred feet wide, and those who have seen both declare it far excels the famous course at Daytona, Fla. The meet now promises to be the most successful ever held in the Northwest.

**Regarding License Revocation**—Attorney General Marcus H. Holecomb gives to the secretary of state the opinion relative to the revocation of licenses. He says that, under section 18 of the law of 1909, which now is in force, the secretary of state has no alternative but to revoke the license of a person guilty of a violation of section 11, which pertains to the operation of motor vehicles on the highways of the state. This comes about as a reply to the secretary of state, who has had to summon many alleged violators of the law to a hearing, as prescribed in the statute.

**Louisville Run in Fall**—The route committee of the Louisville Automobile Club has mapped out the route of the second annual reliability and economy contest. The run this year will be through the western section of the state, and there will be 3 days of travel. The exact date of the contest has not been fixed, but it will probably be held the latter part of September. The first day's run is but a 99-mile drive. It is over the worst part of the road, and enables the car to reach Mammoth Cave before evening. The tourists will take a short route through the cave.

A moderate run of 138 miles will be made the second day to Lebanon, the night control. The third day's run is 182 miles.

**Fighting Over Horns**—The changes in the motor law which are being enacted by the Massachusetts legislature have not yet been passed, as there is a disagreement between the house and senate over the section relating to horns, and so a conference committee has been appointed to bring about some sort of a compromise.

**Club Helps Road-Builders**—The Richmond Automobile Club, of Richmond, Va., has donated \$600 to the road supervisors of Chesterfield county, Va., for use in completing the road improvements between Petersburg and Richmond. The macadamizing of the thoroughfare has been completed all but about 3 miles, and the donation is to be used for this stretch of highway. The board of governors of the Columbus Automobile Club has positively shut down on the practice of donating the use of motor cars for every event that comes along. It has been the custom for the club to adopt a resolution calling upon its members to donate the use of a number of cars. Hereafter, with the exception of the annual orphans' day, the club will not donate cars for any purpose, leaving that to the individual owners.

**Baltimore Orphans' Day Plans**—June 15 has been selected as the date for orphans' day in Baltimore. This event will not be under the auspices of the Automobile Club of Maryland as heretofore, but will be given for the benefit of the little ones by the Baltimore News. This newspaper has taken up the cause of the orphans, and already its appeal to the motor car owners of the city has been a great success. Many of them have expressed their willingness and pleasure of loaning their cars for such a purpose. The boys and girls will be taken

for a jaunt through the city and suburbs and back to their homes after having a big dinner.

**Starts Road Campaign**—The Good Roads Association has been launched at Laporte, Ind., for the purpose of building good roads out from that city. Officers were elected and committees were appointed to look after the different phases of the work.

**Through with Asphalt**—It is probable that no more streets in the city of Milwaukee, Wis., will be paved with asphalt. The new Social Democratic regime, which is conceded to be doing the best administrative work Milwaukee has ever known, has thoroughly investigated the paving question with the aid of experts, and has come to the conclusion that other materials than asphalt must be used, as a saving of money and to get a maximum of service. At the present rate of prices it would cost \$26,800,000 to pave the 500 miles of Milwaukee streets still without pavement, it is estimated by the experts.

**No 24 For Atlanta**—The Atlanta Speedway Association has announced with great positiveness that it will not attempt a 24-hour race this year. Assistant Secretary Nye went to the Brighton Beach track to see if there appeared a good chance of making a go of all-day racing at the Georgia capital. His verdict was no. So work is going on for a local meet to be held about midsummer. This event will be made up chiefly of amateur races, with a few contests for the local professionals. The local speedway association is working hard to get its fall dates changed to October 27, 28 and 29, and has petitioned the A. A. A. for those dates. No reply has been received as yet from Chairman Butler.



BUICK PATHFINDER LAYING TRAIL FOR ST. LOUIS STAR RELIABILITY



# Legal Lights and Side Lights

NOW that the state of New York has shown itself to be so broad-minded as to pass the Callan bill, which is remarkable from the fact that a speed limit of 30 miles an hour is permitted in the open country, the motorists in other sections of the United States have taken a new lease of life and are looking ahead to the millenium when other commonwealths will follow the example of the Empire State and adopt laws that are liberal and fair to all parties concerned. The example set by New York is bound to bear fruit, for in legislation, as in many other things, it requires only a leader to set the whole flock in motion. An example of the benefits of publicity is had in the case of Louisiana, which even now is wrestling with a motor bill which, it is anticipated, will closely approach the ideal in its construction. In framing this measure the Motor League of Louisiana, which is sponsor for the bill, has used as its copy the uniform state vehicle law as drawn up by the American Automobile Association. This is a step in the right direction and shows that it is possible to influence legislation at long range.

## Quakers Are Original

The Automobile Club of Philadelphia is one of the live wires that recognizes the value of printers' ink and one of its latest efforts is a monthly bulletin in which the various state laws are given in tabloid form. The club has wisely cut away from legal terms as far as possible and tells in straightforward English just what the law means. It takes up the case of New Jersey and points out that in that state the registration fee for motor cars is divided into three classes. The first class is for cars of 10 horsepower or less, for which a fee of \$3 is asked; the second class runs from 11 to 29 horsepower, and the fee is \$5; while on all cars of 30 horsepower or more the rate is \$10. The motorist who is given to studying legal measures will appreciate that New Jersey, maligned as it is, has been exceedingly reasonable in the fixing of these registration fees. New York is more grasping, the new rates set by the Callan bill ranging from \$5 to \$20 a car. The Empire State, however, rather evens up matters by asking only \$5 for cars up to 25 horsepower.

New Jersey, however, is not in New York's class when it comes to being liberal in the way of speed limits, but then it must be remembered that the New Jersey law has been in force for some time, while New York is strictly up-to-date. New Jersey, however, has to its credit the fact that it was a pioneer in liberality before New York stole some of its thunder. New Jersey permits a speed of 25

miles an hour in the open country, which was a high-water mark up until the time the Callan bill went to the governor. Twenty miles is allowed in towns and villages and Jersey's interpretation of open country means where the houses average more than 100 feet apart, while it also is possible to maintain the 25-mile clip up to within 200 feet of teams or other vehicles. Exceptions apply to motor vehicles used by military or police in times of riot or insurrection, while physicians are allowed a certain leeway in responding to sick calls.

## Point About Jersey Law

Another good point about the New Jersey law is that the motorist is not always subject to immediate arrest, it being possible for the officers to take the numbers and arrest the violators of speed laws by summons or warrant any time within 30 days. The person arrested for violation of the motor law may by furnishing a cash bond of \$500 or security to the same amount appeal the case from the magistrate's court and be immediately released. In case the constable so desires he may make arrests without warrant where he has been personally a witness of the law's violation.

Having spent a vast fortune on its roads, New Jersey is determined the motorists shall aid in their maintenance and with that end in view its law provides that a tourist from other states must pay a fee of \$1 for a temporary registration tag entitling him to tour in the state one period of 8 days or four periods of 2 days each during the year. But there are fines and punishments provided for failure to do this. Non-registration or display of tags means a fine not exceeding \$100 or imprisonment not exceeding 10 days for the first offense, while this is doubled on the second. If a fictitious number is carried and the state authorities catch the guilty party a stiff penalty awaits, the limit of the fine being \$500 or imprisonment not exceeding 60 days. New Jersey also keeps a sharp eye open for motorists without the proper horn and lamp equipment or for one who misstates the horsepower of his car in securing a license. Here the fine does not exceed \$10. There also is a fine for not keeping to the right when meeting or being overtaken by another vehicle, this fine not exceeding \$25. Licenses may be revoked for a willful violation of the law and the commissioner of motor vehicles is the only one who can restore the tag.

Unless the roads are covered with at least 1 inch of snow or ice tire chains cannot be used on gravel, macadam or other made highways, and the fine for using the chains, except as provided for by the law, means a fine not exceeding \$50. New Jersey also collects from the operators of cars themselves, and the fees for this are graded according to horsepower, the drivers of cars of 29 horsepower limit paying a fee of \$2 and those on cars of 30 horsepower or over, \$4. Motor vehicles may be deposited as bond, but the state provides that the cars are to be considered the property of the state until the case is settled. In the event that the owner does not redeem the car or that the state claim is not otherwise settled within 10 days after the decision is rendered, the car may be sold at public auction for the benefit of the state.

The bulletin of the Automobile Club of Philadelphia also gives an abstract of Delaware's law, which, however, does not differ from the conventional in any respect. There is a reciprocity clause which permits visiting tourists to tour the state without registration providing the home tag is displayed, while the fee exacted from Delaware drivers only is \$5 per year, regardless of horsepower. In the way of speed limits, Delaware permits 20 miles an hour in the country, but cuts this to 12 miles an hour in towns and cities and to 6 miles an hour at curves and crossings or in passing other vehicles. Physicians, police patrols or ambulances do not have to pay any attention to the speed limit.

## Law in Delaware

Penalties for violations of the Delaware law call for a fine of not less than \$10 and not more than \$25, or imprisonment not exceeding 10 days for the first offense; \$25 to \$100 for the second offense if committed within 6 months of the first, or imprisonment for 20 days. A third offense within 6 months calls for a fine of not less than \$100 or more than \$200, imprisonment for 3 months, or both. The license is summarily revoked for a third offense.

All the Delaware licenses and registrations expire the last day of December each year, no matter what time during that year they were issued. Of course, the tag must be conspicuously displayed both front and rear and illuminated at night, but Delaware is not so arbitrary that it will arrest a motorist for the loss of one of the tags. As is the case with New Jersey, Delaware prohibits the use of tire chains except on highways of natural dirt, plank, asphalt, cobble, brick, Belgium block or on at least 1 inch of ice or hardened snow.







# Brief Business Announcements

**MILWAUKEE, WIS.**—The Wisconsin Motor Mfg. Co., of North Milwaukee, has increased its capital stock from \$100,000 to \$200,000.

**Waukesha, Wis.**—D. W. Chase has opened a general electrical and motor repair shop at Waukesha. He was for many years associated with the Waukesha Motor Co.

**London, O.**—The Anderson Automobile Co. has been incorporated with a capital of \$1,500 to operate a garage by H. Anderson, C. L. Hutchison, J. L. Graham, George M. Hickle, I. J. Collins and John H. Keller.

**Cleveland, O.**—The Talbeth Auto Specialty Co. has been incorporated with a capital stock of \$25,000 to manufacture parts and accessories, by Samuel P. Dunn, D. E. Beveridge, J. A. Burke, C. A. Burke and William M. Byrnes.

**Toledo, O.**—The Ohio Motor Sales Co. has been incorporated with a capital stock of \$10,000. The new concern will have the local sales agency for the Hupmobile. Rooms have been secured just off of Madison avenue on Erie street. C. J. Osborn will have charge of the business as manager.

**Indianapolis, Ind.**—A down town sales-room will be leased by the Reliable Auto Exchange and the building it now occupies at 820-822 East Washington street has been leased by the Cole Motor Car Co., which will use it for painting and finishing. The building is a three-story brick structure, 50 by 200 feet.

**Buffalo, N. Y.**—Since the manufacturers recently decided to confine their Buffalo branch to handling the wholesale business in Michelin tires, the retail business has been placed in the hands of four concerns in this city, the Buffalo Motor Sales Co., the Poppenberg Auto Co., the Sagamore Motor Supply Co. and the Chittenden Motor Car Co.

**Milwaukee, Wis.**—The Franklin Automobile Co. has filed an amendment to its articles of incorporation changing the name to Franklin Auto and Supply Co. Henry Danischefsky is president of the company. The headquarters are at 321 Fourth street, Milwaukee. This concern has taken the agency for the Chase motor truck and has the Franklin, Regal and Babcock electric.

**Indianapolis, Ind.**—Two promising concerns have just been organized—the Pyle Spring Tire Co., of Indianapolis, and the Bimel Spoke and Auto Wheel Co., of Portland. The former has an authorized capitalization of \$50,000 and will manufacture a spring tire and motor car parts. Those interested in the concern are G. C. Pyle, W. G. Hunter and W. D. Pyle. The Portland company is capitalized at \$100,000 and will manufacture spokes and

wheels, members of the company being Fred Bimel, J. O. Pierce, J. A. Jaqua, William D. Schwartz and William H. Delamore.

**Richland Center, Wis.**—As the Pier Automobile Co., Kieth Pier has established a garage in a new building, accommodating twenty cars and including a repair shop.

**Columbus, O.**—The Ohio Motor Sales Co., of Toledo, has been incorporated with an authorized capital of \$10,000 to do a garage and sales agency business by Frank W. Coughlin, Eugene H. Winkworth, Frank C. Miller, Percy Parrott and Charles Weirek.

**Cleveland, O.**—The Gas Engine and Apurtenance Co. has been incorporated with an authorized capital of \$10,000, to manufacture gas engines, motor vehicles, motor boats and accessories. The incorporators were Andrew B. Nichols, Edward H. Sherbourne, Florence A. Lautermilch, Rob Roy Alexander and J. M. Bing.

**Milwaukee, Wis.**—Jesse C. Bradley, who was president of the Excelsior Motor Car Co., which conducted a garage and agency at 621 Grand avenue, Milwaukee, up to a few months ago, has filed a voluntary petition in bankruptcy at Milwaukee. His liabilities are \$204,215 and assets \$22,000, one-half exempt. He was president of three big manufacturing companies which re-

## Recent Incorporations

**Allentown, Pa.**—Hamilton Automobile Co., capital stock \$10,000.

**New York**—R. G. Green, Inc., capital stock \$5,000; to manufacture, repair, paint and deal in motor cars, carriages, motor cycles, store motor cars, etc.; incorporators, R. Granville Green, Mabel L. Kirkham and I. Cleveland Kirkham.

**New York**—G. T. Transportation Co., capital stock \$500; to transport passengers, baggage and freight, and deal in motor cars, teams, vehicles of all kinds, etc.; incorporators, Eugene R. Taylor, Will L. Gould and Albert W. Gould.

**Chicago**—Auto Renewal Co., capital stock \$2,500; to carry on a general motor car, garage and repair shop business; incorporators, James S. McClellan, Leo Klein and Jerome J. Cermak.

**Birmingham, Ala.**—Interstate Automobile Association, capital stock \$4,000; to work for good roads and laws for motor operators; president and treasurer, George M. Webb, vice-president and secretary, M. B. Webb, I. J. Kennedy and J. H. Cockran.

**Lancaster, Pa.**—Lancaster Auto Co., capital stock \$50,000.

**Pittsburg, Pa.**—Liberty Auto Co., Inc., capital stock \$5,000.

**Newark, N. J.**—United Auto Co., capital stock \$100,000; to manufacture motor cars, etc.; incorporators, S. H. Levy, J. Sonnabond and P. J. Shotland.

**Bridgeton, N. J.**—Hahn Automobile Co., capital stock \$50,000; to manufacture motor cars, etc.; incorporators, Herbert L. Howell, Claude D. Stowell and Charles A. Nann.

**Auburn, N. Y.**—Auburn Ignition Mfg. Co., capital stock \$25,000; to manufacture and deal in motor car appliances, etc.; incorporators, Ewald A. Raves, William Franke and Charles A. Franke.

**Gloversville, N. Y.**—New England Time Test Co., capital stock \$300,000; to manufacture and deal in motor car tires and appliances for same; incorporators, J. Moses, T. B. Robinson and R. A. Moses.

cently failed, namely the Two Rivers Woodenware Co., Vulcan Steel and Iron Works and Milwaukee Stove Works of Milwaukee.

**Baltimore, Md.**—The Shaffer Mfg. Co., agent for the Pullman car, will erect a new garage at 408 North Calvert street.

**Portland, Ore.**—The Rose City Electric Co., agent for the Babcock car, has recently completed a new garage at Twentieth and Washington streets.

**Toledo, O.**—The Toledo Garage and Supply Co. has opened a garage at 713 Jefferson avenue, where in addition to doing a garage and supply business it will conduct a repair department.

**Buffalo, N. Y.**—Steadily increasing business has made it necessary for the Dixon Motor Car Co. to make extensive alterations and improvements in its store. The company is planning to erect a one-story garage in the rear of the store. It will be 100 by 150 feet.

**Indianapolis, Ind.**—A new sales room has been leased at 19 West Ohio street by the Wilcox-Clemens Auto Co., which has the agencies for the Clark and Speedwell. The company has had temporary quarters with the Studebakers, pending the completion of its permanent quarters.

**Chicago**—Denial is made that the Garfield Park Auto Garage has made a change in the management. The business has been and is now owned by H. E. Halbert. There has been no change in management, and no change is contemplated. The Michigan avenue store handles the Grout and Clark.

**Toledo, O.**—A. Kuhnelt and F. W. Martin have opened a business at 240 Erie street under the firm name of the Toledo Auto Tire Repair Co. Mr. Martin comes from the Morgan & Wright factory, and Kuhnelt was formerly with the New York branch of the Firestone Tire Co. The firm has the agency for the Firestone tires.

**Buffalo, N. Y.**—The United States Auto Station Co. has filed incorporation papers with the county clerk of Buffalo, the capital stock being \$5,000 and the object being to engage in general garage business. The principal stockholder is Frank J. Rohr, of Rochester, N. Y., while the other directors are John A. VanArsdale and Warren Willett, of Buffalo.

**Indianapolis, Ind.**—A branch sales agency has been established in Indianapolis by the Reliance Motor Truck Co., of Owosso, Mich., temporary quarters being taken with the Buick Motor Co. An effort is being made to find permanent quarters, into which the branch will move soon. C. O. Post, of the Reliance factory, has temporary charge of the branch.

# Among the Makers and Dealers



WHITE GARAGE IN LOS ANGELES WHICH HANDLES THE HALLADAY

**McINTYRE Appointed**—W. H. McIntyre, of the McIntyre Mfg. Co., of Auburn, Ind., has been appointed by the governor of the state to attend the good roads convention in Brussels in June.

**Increases Capital Stock**—The Holbrook-Armstrong Iron Co., of Racine, Wis., has increased its capital stock from \$50,000 to \$150,000. It is reported that the company will henceforth pay much attention to the production of gasoline motors for the trade, although this has not been confirmed.

**Oswald Increasing Capacity**—The Oswald Motor Co., of Goshen, Ind., has taken steps to increase the capacity of the plant. Two additions will be erected at once, one being 165 by 65 feet, two stories high; the other will be two stories high, 132 by 45 feet. Both additions will be constructed from cement blocks, and from \$10,000 to \$15,000 will be spent for equipment and the present number of employes will be doubled. The company announces that its entire output for 1910 and 1911 has been sold.

**Johnston White Branch Manager**—R. H. Johnston has been appointed manager of the New York branch office of the White Co., and will enter upon his new duties at once. Mr. Johnston has been advertising and publicity manager of the company since the early days of the industry, and his numerous activities in that position have made him well known to the motoring public. Under the pen names of "Pathfinder" and "Pioneer" he has been a frequent contributor to the magazines on touring subjects. He has devoted much time to searching out and describing touring routes, and the information thus secured has been issued in the form of the

White route books, which have proven exceedingly useful and popular. Mr. Johnston entered the services of the White Co. in time to take part in the famous New York-Pittsburg endurance run of 1903.

**Omaha Concern Moves**—The Nebraska Buick Automobile Co., of Omaha, is in its new garage on Farnam street. It is 75 by 142 feet. The salesroom, 50 by 60 feet, is finished in weathered oak, oak panels extending 7 feet above the floor. The office is at one side of the salesroom and the garage, storeroom and repair shop occupy the rear, reached by a separate entrance. The storeroom has a capacity of 100 cars.

**Cole in Chicago**—To facilitate the handling of Chicago trade and Illinois agencies for the Cole, the Cole Motor Car Co., of Indianapolis, has reorganized its Chicago sales and distributing agency. G. W. Stephens and F. S. Cropley have formed a company to be territory distributors of the Cole 30. Temporarily they will continue to use the salesroom of the Standard Automobile Co., but in the very near future will remove to more commodious quarters.

**Velie Building New Plant**—Ground has been broken for the new plant of the Velie Engineering Co. at Moline, Ill. The building will be located between Third and Fourth avenues and east of Twenty-fifth street. The present plans contemplate a building 600 feet long, four stories high and 80 feet in width. The building will be of reinforced concrete similar to that occupied by the Velie Motor Vehicle Co. The new corporation has secured sufficient ground for four buildings of the size mentioned, and it is expected that manufacturing operations will begin early in Sep-

tember. Plans this year contemplate the manufacture of motors for the Velie Motor Vehicle Co., for which all the machinery has been purchased for July delivery. The new plant has a capacity of thirty motors per day, and delivery to the motor car factory will be by motor truck.

**Sebring Expands**—O. H. Sebring, head of the Sebring plant at Sebring, Ohio, has announced that a plant 500 feet long will be built in Sebring for the manufacture of the Sebring. Mr. Sebring says the plant will employ 700 men and will cost \$200,000 and will be located on the P., Ft. W. and C. tracks.

**Makes Deal with Lambert**—A contract has been made by the Railway Motor Car Corporation of Philadelphia with the Buckeye Mfg. Co., of Anderson, Ind., whereby the former will take the entire output of gasoline street railway cars manufactured by the latter. The Buckeye company manufactures the Lambert friction-drive motor cars, and some time ago built a gasoline railway car for the E. H. Harriman estate; and also built a similar car which made a successful test on the lines of the Indiana Union Traction Co. and Central Indiana Railway Co.

**Barker Quits Overland**—F. A. Barker, sales manager of the Willys-Overland Co., has tendered his resignation, which took effect June 1. He will engage in private enterprises, among which is the business of the Great Northern Life Insurance Co., of which he is president. He began his career as a mechanical, civil and electrical engineer. He was later connected with the Case Threshing Machine Co. Before joining the Overland forces he was for a time with the Stoddard-Dayton. Thereafter he had charge of the entire output of the Willys plant at Indianapolis, finally taking charge of the Toledo end when Willys purchased the Pope plant there.

**Four Garages Sold**—Four garages in Cambridge, Mass., just across the river from Boston, were sold last week to motor dealers in Boston, and a fifth is now under consideration. The value of the four buildings represented \$77,500, but the prices paid for them totaled more than that. They were erected some time ago by M. H. Gulesian, a prominent real estate dealer, and were speedily occupied. The E. D. Dodge Motor Co., Boston, representative of the Pope-Hartford and Waverley electrics, bought two buildings with 20,000 square feet of land, all assessed for \$43,000. The A. P. Underhill Co., Knox agent, bought one with 10,000 feet of land for \$18,000, and a fourth was sold to A. C. Plummer, who represented a motor company at present not ready to move there.



The price was \$16,500. The Whitten-Gilmore company is negotiating for another of the buildings which it occupies at present. They are all one-story buildings, built purposely for garage and repair work and minus posts.

**A. M. C. M. Officials**—While no formal announcement has been made, it is said the officers of the Association of Motor Car Manufacturers are: President, M. Dalton, Flint Wagon Works, Flint, Mich.; secretary, J. G. Bayerley, general manager of the Warren-Detroit Motor Car Co.; treasurer, John B. Chaddock.

**Locates in Canada**—The Canadian New-Way Motor Co., Ltd., a branch of the New-Way Motor Co., of Lansing, Mich., has been formed and a plant is to be built at Welland, Ont., a Canadian town a few miles from Buffalo, N. Y. The new company is capitalized at \$50,000 and the directors are, William E. Newbrough, C. D. Woodbury, E. H. Goodnow, L. M. Gleason and H. E. Thomas, of Lansing. Air-cooled engines will be manufactured and the export trade of the company will be transferred to the Canadian concern, from which exportation can be made to advantage owing to the preferential tariff Canada has with Great Britain and her possessions.

**Receiver Appointed**—The Security Trust Co., of Indianapolis, has been appointed receiver for the Indiana Motor Mfg. Co., whose factory is at Franklin, Ind. Action was taken on a friendly suit brought by W. H. Freeman, a stockholder, who holds a minor claim against the company and who feared that unfriendly creditors might take more drastic action. The company was organized some time ago, and recently moved into its new factory. It has been unable to get sufficient parts, and although it has orders for several hundred cars, cannot finish and turn them into money. The assets of the company are said to far exceed the liabilities. John C. Billheimer, Indiana auditor of state, is president of the company.

**Nashville's Latest**—The \$400,000 capital stock has been subscribed and paid in to establish in Nashville the Southern Motor Works, and the plant of the company, now located at Jackson, Tenn., with a small capacity, will be moved to Jackson. The new plant will have a capacity of 750 to 1,000 cars per year from the beginning, with provision made for expansion. Several of the wealthiest citizens of Nashville are interested in the enterprise. A charter has just been secured legally incorporating the company, with a capital stock of \$400,000 and the following incorporators: A. H. Robinson, Exile Burkett, John L. Wisdom, George W. Killebrew, Johnson Bransford, Arthur B. Ransom, G. M. Neely, J. H. Ambrose, John W. Love and John H. Howe. The company already has secured a building, having purchased the factory of the Phoenix cotton mills, and it is now being cleaned and rearranged. Exile

Burkett is president of the company, A. H. Robinson is vice-president, J. H. Fisher secretary and treasurer, and W. H. Collier is superintendent. The company manufactures the Marathon.

**Adds to Power Plant**—The New Departure Mfg. Co., of Bristol, Conn., manufacturer of New Departure ball bearings, is installing a twin tandem Snow gas engine of 500 horsepower, thereby increasing its power plant to five engines of this type. The new engines will furnish power for three new buildings now in course of erection.

**Cartercar Growth**—The Carterecar Co., Pontiac, Mich., has taken up an option of several blocks of land adjoining its factory, and plans are now being made for extensive additions to the plant. The work of construction will be pushed as rapidly as possible, as it is the intention to have the new additions all completed in time to begin turning out the new 1911 models early this fall. When the additions are completed the Carterecar company will have one of the largest factories in Pontiac for the building of pleasure cars. It will afford over 12 acres of floor space with exceptional lighting arrangements.

**Adds to Truck Plant**—The Abresch-Cramer Auto Truck Co., of Milwaukee, Wis., has moved into new and larger quarters in a five-story reinforced concrete structure on Third street, between Poplar and Vliet streets, Milwaukee. The concern grew out of the Charles Abresch Co., for 40 years a big wagon and carriage-making company at Fourth and Poplar streets, which began the manufacture of motor trucks about 2 years ago. This department is now being conducted by the Abresch-Cramer Auto Truck Co. The

Charles Abresch Co. has become an extensive builder of motor car bodies. The motor truck works have a present capacity of 100 per year, but this will be increased to 200 as soon as possible.

**More Overland Expansion**—A large army of men is busy erecting a re-enforced concrete building in Indianapolis for the Overland company. Not one stick of wood will be used in this building's construction. There will be three stories, which will double the present capacity of the motor department. More than 1,000 men are now employed in this department. The new building, which has more than 50,000 square feet of floor space, is expected to be occupied within 3 weeks. The building is only one of a series of such substantial and sanitary structures that the Overland company is building. This company has grown so fast within the last 2 years that at one time tents were used in Indianapolis.

**Engineering Society Disbands**—The New Departure Engineering Society, which was organized a year ago, has voted to disband. The club has a membership of 500, and it was also voted to turn all the club property over to the New Departure Mfg. Co. It is the intention of the company to continue the club as heretofore, but a board of managers will be installed instead of a board of officers. The taking over of the club by the company will make for an enlargement of the scope of the organization. The club has had lectures on various subjects pertaining to motor car construction by noted speakers. A series of technical talks is planned for the near future. The membership in the organization is to be limited to employes of the New Departure Co., of Hartford, Conn.



NEW GARAGE OF MCINTYRE AUTOMOBILE CO. AT OMAHA, NEB.

# COPPER-ALUMINUM ALLOYS WITH MANGANESE

## PART VII

**EDITOR'S NOTE**—The following is the seventh installment of the ninth report of the alloys research committee of the Institution of Mechanical Engineers of Great Britain, which report was presented in full during the session, January, 1910. The authors of this report are Dr. W. Rosenhain and F. C. H. A. Lantberry, of the National Physical Laboratory, Telling-ton, Eng.

IT WAS found that there was always a more or less infusible residue left in the bottom of the crucible, and only about 8 pounds of granulated alloy were obtained. Analysis of an average sample of this alloy gave the following result:

	Per cent
Copper .....	86.14
Manganese .....	31.38
Silicon .....	0.014
Iron .....	1.86
Aluminum .....	nil
Nickel .....	0.36
Carbon .....	0.053

It would appear from the lowness of the manganese content of this alloy that better yields would be obtained if an alloy of lower manganese content were aimed at in the first instance.

To test the effect of using the cupro-ferro-manganese just described on the heavy alloys of the copper-aluminum-manganese group, the alloy No. 6 was chosen, since its higher manganese content would tend to render the effect more pronounced than it would be in the other alloys. Accordingly, 185 ounces of copper were melted and 20.5 ounces of aluminum, and 22 ounces of cupro-ferro-manganese were added in the same way as that already described for the preparation of alloys made with pure cupro-manganese. The resulting alloy was found to have the following composition:

	Per cent
Copper .....	87.98
Aluminum .....	8.77
Manganese .....	2.88
Iron .....	0.31
Silicon .....	0.06
Carbon .....	nil
Nickel .....	nil

With this composition we may compare the results of a complete analysis of the original alloy No. 6, which gave:

	Per cent
Copper .....	88.11
Aluminum .....	8.77
Manganese .....	2.98
Iron .....	0.02
Silicon .....	0.02
Carbon and nickel .....	nil

As would be anticipated from the nature of the materials used in each case, the principal difference between the two materials lies in the iron content, which is much higher in the alloy made with the cupro-ferro-manganese.

Four sand-castings and three chill-castings

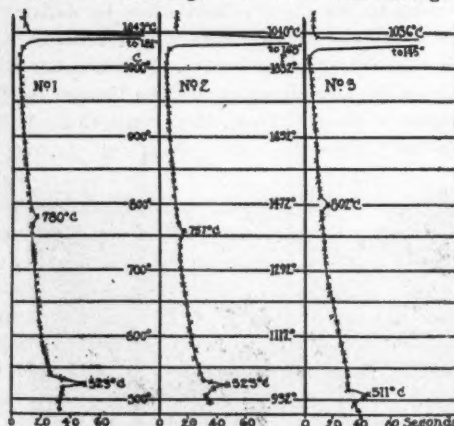


FIG. 24—INVERSE RATE COOLING CURVES

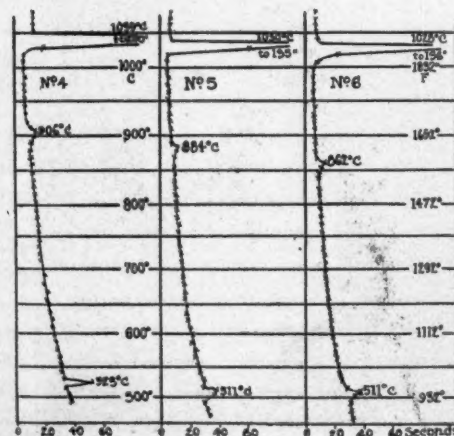


FIG. 25—INVERSE RATE COOLING CURVES

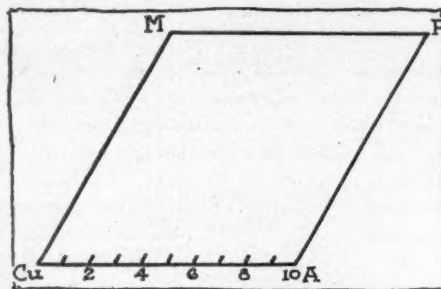


FIG. 23

were made of this alloy and the results of tests on these castings are given in table 42, where the corresponding results of the original alloy No. 6 are included for comparison.

TABLE 42

Tensile Tests on Sand-and Chill-Castings of Alloy No. 6b made from Cupro-Ferro-Manganese

No.	Condition	Yield-point	Ultimate stress	Elastic ratio	Elongation on 2 in., per cent
6b	Sand-casting	11.38	32.20	0.35	34.5
6	Sand-casting	10.80	31.60	0.34	24.0
6b	Chill-casting	12.92	35.72	0.39	36.0
6	Chill-casting	14.80	34.40	0.43	26.0

With the exception of the yield-point of the chill-castings, all the figures for the alloy No. 6b are better than those for the original alloy No. 6; this is particularly notable as regards the elongations which are very markedly better in the alloy containing a small proportion of iron. This result may perhaps open up a further means of improving the qualities of these alloys, but at all events the present experiment appears to show very clearly that there is no disadvantage in using a cupro-manganese containing a moderate percentage of iron, such as can be readily obtained when an 80 per cent ferro-manganese is used as the original source of manganese.

An attempt was also made to introduce the manganese into these alloys directly in the form of ferro-manganese, but the attempt was abandoned on account of the very great difficulty experienced in dissolving the ferro-manganese in the molten alloy even at very high temperatures; lumps of unaltered ferro-manganese were always left in the crucible and no satisfactory result could be obtained.

### The Constitution of the Alloys

It has already been pointed out, in the introduction, that the adequate study of the constitution of a ternary system of alloys, by the methods and with the degree of completeness attained in the case of binary alloys would involve an almost prohibitive amount of labor. Therefore, although the authors hope at some future time to make an attempt to investigate the entire ternary system now under study, for the purposes of the present report their investigations of the constitution of the alloys has been confined to a range embracing the useful alloys, with a sufficiently wide margin to allow of sound conclusions being drawn—a margin of this kind being required in order to show the future trend of curves, whose meaning the absence of this wider information would be obscure. The range chosen, so far as the alloys rich in copper are concerned, covers a lozenge-shaped area of the ternary diagram, represented by the area CuAPM in Fig. 23, where the line AP represents an aluminum-content of 11 per cent, while the line MP represents 10 per cent of manganese. It will be seen that this area is approximately co-extensive with that dealt with in the exploratory heats. Of the alloys lying within this area over 100 have been prepared. Most of these were prepared in laboratory quantities

only, viz., small meltings of about 250 grammes were made for purposes of observing the cooling-curves and the micro-structures; the alloys already made for the exploratory heats and for the large heats were also examined for the purposes of the constitutional model, about 300 grammes of the alloy being re-melted in the laboratory and observed for cooling-curve purposes.

The cooling-curves of all these alloys were taken by means of the inverse-rate method; for the purpose of determining the freezing-point this is practically the only available method, and since it has been shown that this method can be made adequately sensitive to detect even minor evolutions of heat at subsequent stages of the cooling process, these time observations were carried down to a temperature of 450° C.—842° F. In the greater number of cases these cooling-curves were taken in duplicate, while in certain instances an additional number of cooling-curves were taken for the purpose of clearing up special difficulties. The duplicate curves always agreed very closely. Some typical examples of these curves are illustrated in Figs. 24, 25, 26 and 27.

In addition to these inverse-rate cooling-curves, both heating and cooling-curves by the differential method were taken in the case of all the alloys made in larger quantities (the nine selected alloys), since the authors regard an accurate knowledge of the thermal behavior of these alloys as an essential preliminary to experiments on the heat-treatment of the alloys. Owing to the large amount of time occupied by these observations the authors were obliged to abandon for the present their original project of taking differential curves of all the alloys in the area CuAPM. The differential curves actually taken are shown in Fig. 28 to 32 inclusive, where the curves are plotted in the form of the derived differential curves, which one of the authors has shown to be the best form of representation for these observations. These curves were taken down to a temperature of 300° C.—572° F.

For the purpose of locating the exact position of each of the alloys whose cooling-curves had been taken on the ternary diagram, the ingot was drilled and the drillings analysed for the purpose of making accurate determinations of the copper and manganese content; the large number of alloys to be dealt with pre-

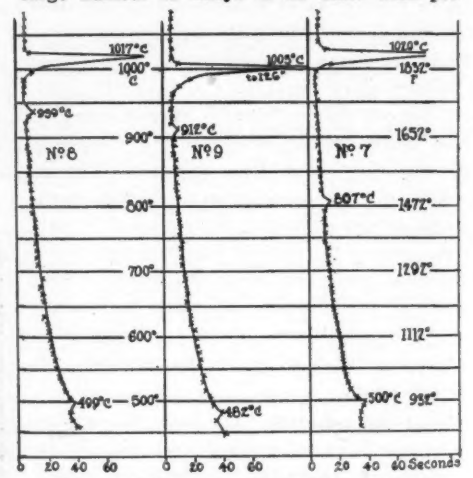


FIG. 26—INVERSE RATE COOLING CURVES

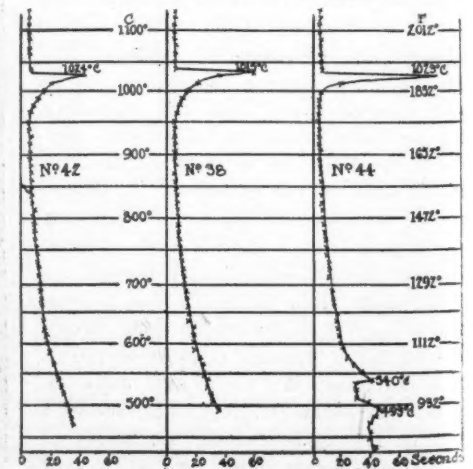


FIG. 27—INVERSE RATE COOLING CURVES



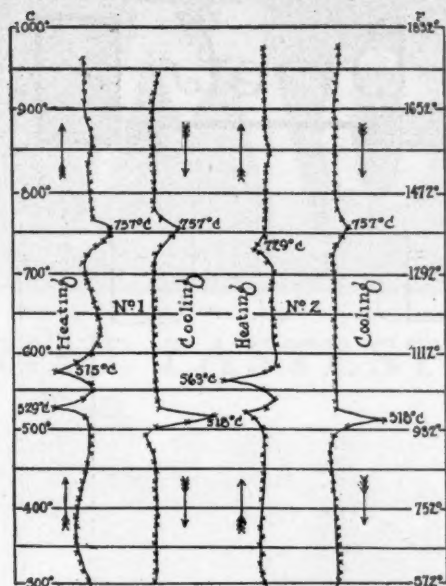


FIG. 28—DERIVED DIFFERENTIAL AND COOLING CURVES SHOWING MOVEMENT OF THE DIFFERENTIAL GALVANOMETER

Gooding, Idaho, May 28—The ranchers and business men of this state have entered on what is declared to be the greatest and most widespread campaign for good roads ever inaugurated in the west. Plans are being formulated to have Idaho, Utah, Wyoming and Colorado join in team work for the Interstate Good Roads Association, which is supporting the memorial committee appointed at the recent good roads institute in Salt Lake with instructions to memorialize congress for the leasing of one million acres of land, the proceeds of which will be used for the construction of interstate roads throughout the intermountain country. R. P. Fuller, commissioner of lands in Wyoming, author of the measure, says that it has received the unqualified endorsement of all four states involved in the project, and that the matter has assumed the aspect of a definite reality.

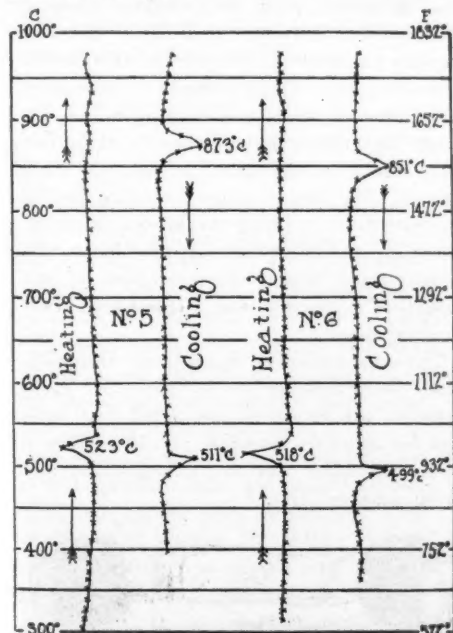


FIG. 30—DERIVED DIFFERENTIAL AND COOLING CURVES SHOWING MOVEMENT OF THE DIFFERENTIAL GALVANOMETER

cluding the possibility of making a complete analysis of each of them, but complete analyses of the three selected alloys were made, and in the remainder the aluminum was estimated by difference. From the small proportions of impurities present in these alloys, the error involved in thus neglecting them will, as a rule, be less than 0.1 per cent, and in many cases less than 0.05 per cent—errors which, for purposes of constitutional study, may be safely neglected.

(To be continued)

## Idaho Demands Roads

The League of Southern Idaho Commercial Clubs has joined in the work, and the proposition is receiving the hearty support of the governors of the four states interested. In accordance with the plans of the good roads advocates, the legislatures of Idaho, Wyoming and Utah will be asked to pass such laws as shall be necessary for the laying out and constructing within those several states of a road to be known as the tristate highway, connecting the capitals of the states. The legislatures also will be petitioned to enact suitable and adequate laws for licensing of motor cars owned within the confines of their respective states, and that the revenues so received shall be used for the construction of the inter-mountain highways and for no other purpose, and that there shall be as many miles of macadam road built each year as the revenues derived from such licensing shall permit, in addition to the regular appropriations which each state and county within the several states shall be able to appropriate from the general fund for such road building purposes.

All of the states and territories between the Pacific coast and the eastern line of the Rocky mountains are invited to become a part of and to participate in the future conventions of the Inter-mountain Good Roads Association. The annual meeting of

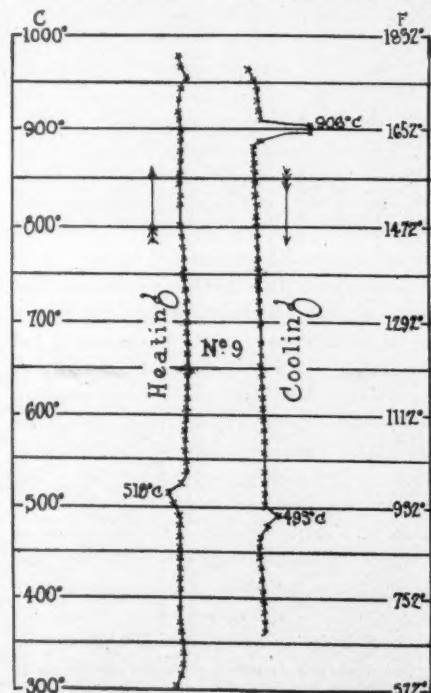


FIG. 32—DERIVED DIFFERENTIAL AND COOLING CURVES SHOWING MOVEMENT OF THE DIFFERENTIAL GALVANOMETER

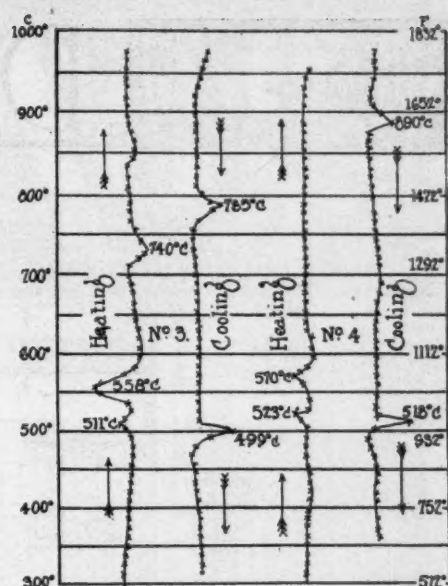


FIG. 29—DERIVED DIFFERENTIAL AND COOLING CURVES SHOWING MOVEMENT OF THE DIFFERENTIAL GALVANOMETER

the association will hereafter be held during the summer or fall months, when practical road building can be demonstrated, and the United States government is invited to co-operate in these demonstrations. The convention for 1910 will be held in Ogden, Utah, and in 1911 it will be at Pocatello, Idaho. The convention at Ogden will determine the meeting place for 1912, and thereafter each annual meeting will determine and set the place and date for the meeting two years in advance.

Gooding, as one of the most progressive towns of southern Idaho and the metropolis of Lincoln county, is going after the 1912 convention, and initial plans looking toward that end are already being made. The Gooding Commercial Club is considered one of the liveliest and most aggressive of the League of Southern Idaho Commercial Clubs, and the prospects for the 1912 convention here are excellent.

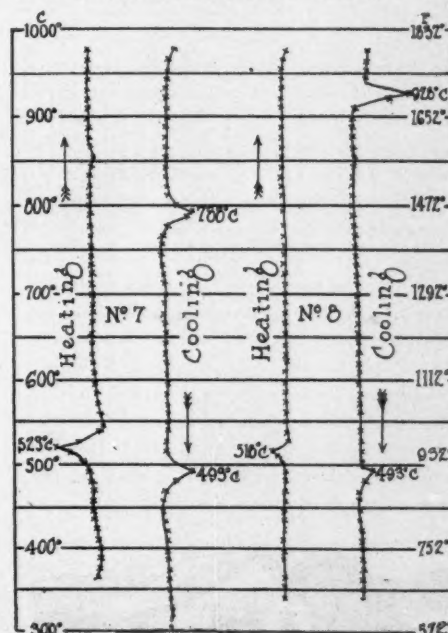
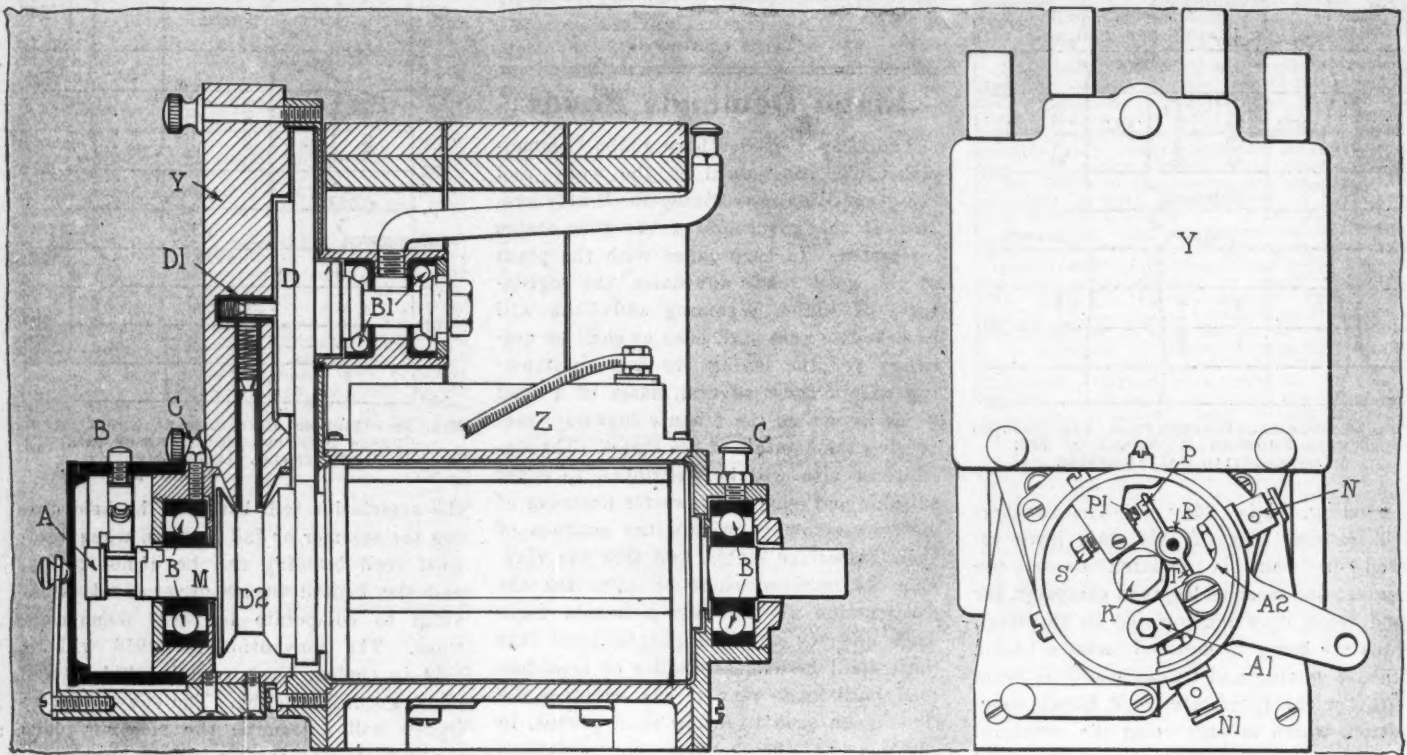


FIG. 31—DERIVED DIFFERENTIAL AND COOLING CURVES SHOWING MOVEMENT OF THE DIFFERENTIAL GALVANOMETER.



# Development Briefs



FIGS. 1 AND 2, ILLUSTRATIONS SHOWING THE SIDE AND END SECTIONS OF THE VOLTA MAGNETO

THE Buffalo Ignition Co. manufactures the Volta magneto, which generates high-tension current in the revolving armature without the use of an external set-up coil carried on the dash. The armature contains the usual primary and secondary winding and as shown in Fig. 1, a vertical section of the instrument, it is carried on two races of ball bearings B, one at either end, which bearings are separated by partitions from the other mechanism. Oil cups C are furnished for the lubrication of these bearings. The breaker box mechanism D is in its usual position and the breaker mechanism for interrupting the primary current is shown in the end section, Fig. 2. In this breaker device cam K with its two cams diametrically opposite rotates, leaving the remainder of the breaker mechanism stationary. This cam is of hardened steel and bears upon a steel roller R on the timing lever T. On this lever is the removable interrupter point P, whereas the stationary point P1 is on the contact screw S, which is adjustable, while the engine is running.

The path of the primary current from the primary winding on the armature is through a central insulated wire passing through the armature shaft M, to an insulated button A,

and thence, Fig. 2, through the flat spring A1 to the insulated mounting A2, thence through the timing lever T to the grounded contact P1.

The condenser on this magneto is shown at Z, where it is located above the armature housing instead of being mounted on the armature shaft. It is separately contained in a water-tight box secured in place by one screw and a pin, so that its removal and the replacement by a new condenser is a simple problem. The binding post N is connected with the condenser and the other binding post N1 connects with the ground switch.

The secondary current system in this magneto starts with the secondary winding on the armature, and includes a distributor carried on two ball bearings B1 in the top of the instrument. This distributor differs from others in that the hard rubber housing Y has no high-tension contact segments, but instead the rotating disk D of hard rubber has a single T-shaped inlaid brass segment which receives the current from the carbon brush D1. The cross bar of this segment travels around making one contact at a time with as many carbon brushes as there are cylinders. These brushes take the place of the usual stationary segments, and the brass segment takes the place of the usual distributing brush. The claimed effect of this design is that it increases considerably the insulated distance from one collective brush to the next, since the brushes are smaller than the usual segments. This has been done to avoid arcing from one segment to the other.

The high-tension current is taken up by a collector ring D2 located directly beneath the distributor housing Y, this housing fitting so closely as to prevent water entering between it and the case carrying the armature bearings.

The armature used on the Volta magneto is large. The secondary winding is claimed to have 600 more turns of wire than usually employed, the object of this being to produce a hotter spark for ordinary cranking. The clearance between the armature and pole pieces is reduced to a minimum in that the armature after being completely assembled is brought to its final size by grinding. In order that the armature made be as perfect as possible an automatic indicator is made use of while the windings are being put on the armature, it being the use of this indicator to detect breaks in the insulation, which would impair the usefulness of the armature if the wire was allowed to be used in such shape.

The usual horseshoe magnets are employed, there being three groups of two each. These magnets are imported and given two tests, one for magnetic strength, and if not found up to standard they are remagnetized and given a second test.

